

### The economics of the family: a review of the development and a bibliography of recent papers

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Österreichisches Institut für Familienforschung  
Austrian Institute for Family Studies

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## **The Economics of the Family**

*A Review of the development and a bibliography  
of recent papers*

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PAPERS

## **Abstract**

*The paper provides an overview of the various strands of research within the Economics of the Family. Whereas traditional microeconomic analysis treats the household as a black box the New Home Economics approach by Becker/Gronau distinguishes between individuals, but family members have unitary preferences and therefore exhibit one unique, joint utility function. Within game-theoretic models of intra-family resource allocation – cooperative as non-cooperative games – the, generally different, individual preferences are determinants of all (possible) bargaining outcomes.*

*The second part of the paper consists of a bibliography containing relevant recent papers sorted by the different approaches.*

## **Abstract - Deutsch**

*Das Papier gibt einen Überblick über die verschiedenen Forschungsströmungen der Familienökonomik. Während die traditionelle Mikroökonomie den Haushalt als ‚Black Box‘ behandelt, unterscheidet der Ansatz der ‚New Home Economics‘ von Becker/Gronau zwischen Individuen innerhalb eines Haushaltes, weist diesen jedoch eine gemeinsame Nutzenfunktion, demnach auch einheitliche Präferenzen, zu. Bei – kooperativen wie nicht-kooperativen – spieltheoretischen Modellen intrafamiliärer Ressourcenallokation werden die unterschiedlichen individuellen Präferenzen als bestimmende Faktoren der (möglichen) Verhandlungsergebnisse behandelt.*

*Der zweite Teil des Papiers besteht aus einer Bibliographie, die die wichtigsten jüngeren Papiere zu den oben erwähnten Strömungen erfasst.*



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# I Introduction

Questions about joint decision behaviour and resource distribution within households have been focused by economists for decades. Regrettably, these topics were often considered as not essential to economic analysis. Most textbooks in economics do not distinguish between market behaviour of individuals or households. The household's welfare functions are assumed to have identical properties as individual's utilities. Examining e.g. revealed preferences it does not matter whether the identified preference pattern corresponds to the genuine utility of the observed individual or to the agreed joint demand function of the household, but when modelling family dynamics and resource allocation over time, individuals' and groups' utility functions have to be separated analytically.

The paper is divided in two parts: A review, where the main ideas of family economics are discussed and modelled, and a bibliography, where recent papers and books building their approaches on the seminal papers and ideas discussed in the review are cited and commented. 'Recent' works are defined as contributions that were published from 1990 on. Reviews of works before this period are well documented within the 'Handbook of Population and Family Economics'<sup>1</sup> published in 1997.

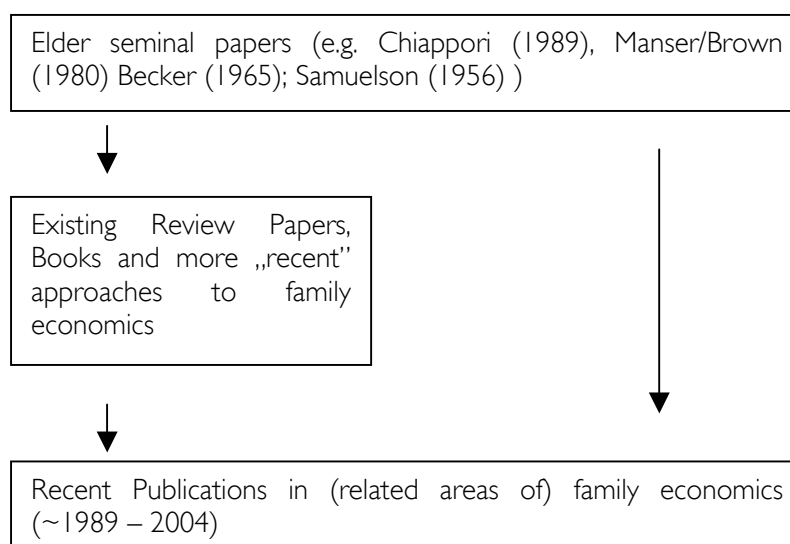


Figure 1: Research strategy for the bibliography

Recent papers working on the models discussed are identified via literature research within EconLit, the Social Science Citation Index, JStore and ProQuest. The research strategy is straightforward: The (first round) thematic research is based on typical keywords like 'new home economics' or 'collective labour supply', then the citations of articles are compared with a list of seminal papers in the field of family economics. That way the evolution of family economic models within the last fifteen years can be reconstructed (Figure 1). Of course a bibliography like this can never be complete. Nevertheless, this work can be a modest contribution to the ongoing development of "family economics".

## 2 Review:The evolution of “Family Economics”

The review starts with a discussion on the existence of social indifference curves (chapter 2.1) that determined some later developments in this field, continues with the 'New Home Economics'-approach by Becker/Gronau (chapter 2.2 to 2.3), and finally comes to game theoretic models of intra-family resource allocation (2.4). Here applications of the classical concepts of non-cooperative (2.4.3) and

<sup>1</sup> Rosenzweig, M. R. and O. Stark (1997) "Handbook of Population and Family Economics"; Elsevier

cooperative (2.4.2) games will be discussed. One well known reduced-form epigone model of the cooperative approach, the so called 'collective labour supply model' that can be extended to all activities considered, will be discussed in (2.4.3).

## 2.1 Samuelson's 'Social Welfare Contours'

**Formelabschnitt** | One of the first contributions regarding the dependence and characteristics of household's preferences was a seminal paper of Paul Samuelson (1956). Criticising broadly Scitovsky's<sup>2</sup> attempt to build up social indifference curves for nations respectively large groups or communities within nations, Samuelson proved the non-existence of such social indifference functions as the groups' members are not in permanent personal contact. Instead - partly contradicting Scitovsky's approach - he developed a 'theory of social welfare contours' for families. Within this approach, Samuelson restricted resource reallocation to intra-family shifts in income. Personal preferences are described by a standard utility function where  $\mathbf{x}^i$  is a vector for all goods and services traded on markets.

$$u^i = u^i(\mathbf{x}^i) \quad s.t. \quad (\mathbf{x}^i)' \mathbf{p} = I^i \quad [1.1]$$

The family's utility is defined as a weighting function of its member's personal preferences.

$$U = f(u^1(\mathbf{x}^1), u^2(\mathbf{x}^2), \dots) \\ s.t. \quad \mathbf{x}' \mathbf{p} = I := \sum_{i=1}^n I^i = \sum_{i=1}^n I_0^i \quad [1.2]$$

Additional income will be distributed according to these weights. Following the ordinal indicator function  $f(\cdot)$ , weights do not need to be static for all levels of family utility respectively income. The only condition that has to be met is that "income must always be reallocated among the members of our family society so as to keep the 'marginal social significance of every dollar's unit equal'."<sup>3</sup>

$$\frac{\partial U}{\partial u^1} \frac{\partial u^1}{\partial I^1} = \frac{\partial U}{\partial u^2} \frac{\partial u^2}{\partial I^2} \quad [1.3]$$

With these properties Samuelson stated following basic theorem of revealed group preferences<sup>4</sup>:

- "If each group member's demand and indifference contours have the conventional 'regular' convexity, and
- if the social welfare function is defined to have similar regular convexity properties, and
- if within the group optimal lump-sum transfers are always made,

then it follows:

- There will result observable demand totals that are functions of market prices and total income alone, and
- that these demand functions will have all the Slutsky-Hicks or revealed preference properties of any single consumer's demand, and
- there will exist a set of indifference contours relating the totals  $X, Y, \dots$  that has the regular properties of any individual's contours and which we can pretend a single mind is engaged in maximising."

Hence the observable family demand functions have to be homogenous of degree zero in prices and income like the underlying individuals' functions. The family indifference curves – being the envelopes of the individual's respective curves – exhibit the same basic properties as their constituting elements: Completeness, transitivity, continuity.

Within Scitovsky's works social indifference curves need not and usually do not exhibit transitivity, they intersect. Also collective-choice-models mention the possibility of intransitive voting behaviour<sup>5</sup>. Samuelson also employs Pareto utility (possibility) frontiers that are falling monotonically from north-east

<sup>2</sup> Scitovsky T. "A Note on Welfare Propositions in Economic"; Review of Economic Studies (1941) p. 77-88

<sup>3</sup> Samuelson, Paul (1956) p. 11

<sup>4</sup> ibid. p. 16

<sup>5</sup> but these models had not been developed by 1956

to south-west but are not strictly quasi-concave. Samuelson argues that – as these utility frontiers are drawn in ordinal space – any monotonic transformation can transform the utility possibility frontier to a quasi-concave function or the partly non-quasi-convex social utility to a quasi-convex curve. No proof had been given that same monotonic transformations in ordinal space will do both. But exactly this proof would have been essential: Social utility's transitivity in goods requires transitivity in individual's utilities 'just' given by assumption of a monotonically rising  $f(\cdot)$ -function. So this assumption distinguishes a family or family-related group, where individuals are in permanent personal contact and therefore some resource reallocation function will be agreed on that makes nobody worse off when real income rises, from any other group.

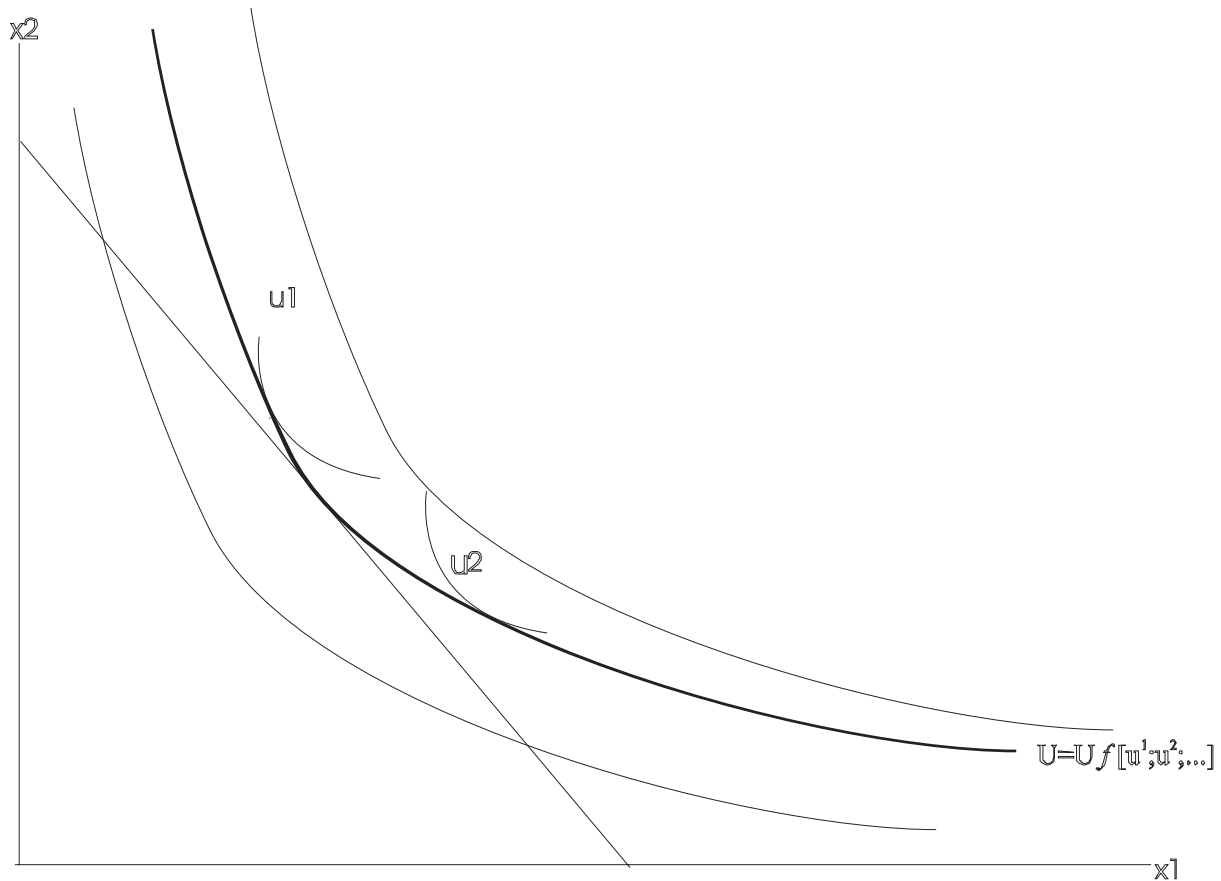


Figure 2: Family indifference curves as envelope of its members utilities  
Source: Samuelson (1956) p. 16

In this 1956 paper Samuelson mentioned the crucial point that continued to be discussed extensively within the next three decades:

*"Of course, we might try to save the conventional theory by claiming that one titular head has sovereign power within the family and all of its demands reflect his (or her) consistent indifference curves. But as casual anthropologists we all know how unlikely it is in modern Western culture for one person 'to wear the pants'. It is perhaps less unrealistic to adopt the hypothesis of a consistent 'family consensus' that represents a meeting of the minds or a compromise between them."*<sup>6</sup>

Within joint utility approaches like the ones following in chapter 2.3 describing the "New Home Economics" approach, conventional neoclassical theory of individual's behaviour can be applied directly to families and households. Models that try to investigate the development process from different individual preferences to the family consensus will be discussed in 2.4.

<sup>6</sup> ibid. p. 9

## 2.2 Resource allocation within the family

**Formelabschnitt (nächster)** From an economic perspective, it generally seems to be most important to analyse resource allocations. Within economic theory of the family resource allocation is regarded to have leading impacts on family formation, fertility and dissolution decisions. The main question in this stage is: which resources has to be focused on? Is it – like in Samuelsons' 1956 paper – total income, given that every family member buys his/her own consumption goods and services and no public goods exist within the family, or is it the aggregation of these goods and services per se? What about the time invested in raising the income, the time invested in selecting and buying goods and services, the time needed for preparing certain goods – for instance meals – before they can finally be consumed, what about the time that is needed for this final consumption? All these question led to an emphasising new school of economic thought, alternatively named "new home economics", "home production models" or "time allocation theory"<sup>7</sup>.

Theory of household production has mainly arisen from consumption theory formulated by Becker, Lancaster, Muth and others in the early 1960ies<sup>8</sup> that emphasised on the fact that market goods and services are not themselves agents generating utility but rather inputs in a process that generates commodities which, in turn, yield utility to the individual. In addition, as introduced by Becker's seminal paper on household production<sup>9</sup> and partly by Mincer's paper on female labour participation<sup>10</sup>, the agent's time was identified as the second necessary input of this utility gaining process. According to this approach the agent maximises welfare subject to time as well as to budget constraints. Welfare is a function of commodities that are produced using market goods and time.

This new approach has been put to a wide field of approaches regarding analysis of fertility, consumption, labour supply and many others but it seemed to have been overlooked that this theory did not deal with household production itself but more with consumption technology (in Lancaster's terminology). It was Mincer's paper (1962) that first pointed out that – at least in the case of women – work at home and leisure should be separated. Within Becker's paper (1965) this distinction was not worked out that clearly, mainly due to practical difficulties in distinguishing these two categories empirically<sup>11</sup>. Instead, these activities were summarised to 'non-market activities' or – as synonym – 'home production'. "For that reason, the theory of allocation of time is of little help where it is most needed, namely, in the analysis of time-budget data"<sup>12</sup>. Of course, as they first did not assign all the time spent outside market work to "unproductive" leisure, like most models of labour supply did before and even afterwards, these approaches were a milestone in economic analysis of individual behaviour. But as they did assign all non-market activities to one "home production" category, the analysis was not sharpened adequately. For that reason the following model is oriented rather on Gronau's<sup>13</sup> approach than on Becker's seminal model.

## 2.3 Home production

As this is a joint-utility maximising approach, where one agent decides for the whole family, also the formalisation of the model can be reduced to a single agent's decision. Every individual is equipped with a personal utility function  $[U]$  over a vector of commodities  $[z]$ . Every commodity is produced by the inputs of goods  $[x]$  and (leisure) time for consumption resp. usage  $[l]$ .

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<sup>7</sup> will be used synonymously throughout following chapters

<sup>8</sup> e.g. Lancaster, K. (1966): 'A New Approach to Consumer Theory', Journal for Political Economy

<sup>9</sup> Becker, G.S. (1965): 'A Theory of the Allocation of Time', Economic Journal

<sup>10</sup> Mincer, J: 'Labor Force Participation of Married Women'; in: G.Lewis (ed.) 'Aspects of Labor Economics'; 1962

<sup>11</sup> for instance: Is playing with the child (a) leisure, (b) work at home, or (c) investment in human capital of the (altruistic) mother in favour of the child?

<sup>12</sup> R.Gronau (1977) p. 1100

<sup>13</sup> R. Gronau (1977) p. 1104 ff and R.Gronau (1986) p. 273ff; These two models are highly interrelated



$$\begin{aligned}
 U &= U(x, L); \quad x = x_m + x_h \\
 \text{s.t.:} \quad (1) \quad &x_h = z(H); \quad z' \geq 0; \quad z'' \leq 0 \\
 (2) \quad &x_m = wN + V \\
 (3) \quad &L + H + N = T
 \end{aligned} \tag{2.1}$$

The goods can either be purchased on the market  $[x_m]$  or be produced within the household  $[x_h]$ . The composition of the goods vector  $[x]$  does not affect the commodity space  $[z]$ <sup>14</sup>. Goods ready for consumption made within the household are produced following the strict quasi-concave function<sup>15</sup> while purchased goods can be bought up to the income limit, that divides in earned income  $[w]$  and wealth given  $[V]$ . As activities are divided in three classes, time can and has to be spent entirely on these activities.

An intuitive distinction between work at home (home production time) and leisure (home consumption time) is that work at home is something most agents would like to have somebody else done for themselves, given that the costs do not exceed the agents' opportunity costs for doing it themselves, while that is definitely not the case for leisure. Even if the agent would prefer to transfer leisure to another person, the leisure (or consumption) activity he/she needs (at least sleeping, eating, and personal care duties) can not be enjoyed by a surrogate. Thus, work at home can be regarded as a time use that generates services which have a close substitute in the market, while leisure has only poor market substitutes. Concerning the direct utility they generate, work at home and work in the market can be perfect substitutes, given the person is indifferent between goods and services purchased in the market or produced at home.

The necessary conditions for an interior solution of the optimisation problem call for the marginal product of work at home to equal the marginal rates of substitution between goods and consumption time, which in turn equals the shadow price of time, the – exogenously given – actual wage rate  $[w]$ .

$$z' \equiv \frac{\partial U / \partial L}{\partial U / \partial x} \equiv w \tag{2.2}$$

These conditions are depicted in Figure 3(a): The home production function is described by the concave curve on the left  $[TB_0'A_0C_0]$ . The more time the individual spends working at home, the greater the amount of home produced goods and services. If the agent spends all his time in home production (that is: no work in the market and no leisure either) he/she can produce (and gain)  $[OC_0]$  units of goods. In the absence of any markets this curve is the agent's opportunity frontier. The labour market expands this set: given a real wage  $[w]$  – the slope of  $[A_0E_0]$  – the agent can trade his/her time for market goods along this price line  $[A_0E_0]$ . At the optimum the agent chooses the adequate combination of goods  $[x]$  – produced at home or bought in the market – and leisure  $[l]$ . For that he/she has to spend the time budget share of  $[l_0n]$  in the market and  $[NT]$  time units on home production. Alternatively, if the agent has a high preference for leisure – or a time costly consumption technology – he/she could decide not to work in the market, expand his/her leisure  $[l]$  to  $[0L_0']$  and even reduce home production  $[H]$  to  $[L_0'T]$ .

At this point it should be noted – and that is the essential difference to Becker's approach – that an agent may adopt a goods-intensive technology, such as  $[B_0]$  but it will still be home-production intensive in the sense that still a large part of the goods and services stay self-produced. Thus, leisure intensive and

<sup>14</sup> This assumption is crucial, as the more 'concrete' formulation  $z = z(x_m, x_h, l)$  – like stated in Gronau (1973, p. 635f) – would only have limited analytical impact. Restrictions and implications of this assumption are discussed below.

<sup>15</sup> For simplicity market goods that enter into the production of home goods are ignored. The decline in the value of marginal productivity at home is not exclusively due to fatigue or changes in the input proportions but also to a change in the composition of home made goods  $(x_h)$ : Following the dual approach of the optimisation problem an additional increase in home production activities  $[h]$  produces additional output  $(x_h)$  that could be bought at lower shadow prices on the market.

home-production intensive technologies are not synonymous. Aggregating them to one category will mislead analysis. There are only two extreme cases, where the aggregation of leisure and home production would not harm: First, when the marginal productivity of work at home falls short of the real wage rate  $[w]$ , there is exactly no home production, instead we have a “real” dichotomy of work in the market and leisure<sup>16</sup>. The other extreme is the opposite of the first: Given the slope of the home production function is strictly above the real wage rate, this agent would specialise in home-production entirely and would not offer his/her labour on the market<sup>17</sup>. So the question about rationality of offering labour within the household respectively on the market depends on the real wages compared to the (individual) home production function, as well on the second order behaviour of the home-production function. With a nearly linear home-production function, say the marginal productivity is quite stable, the extreme cases of offering either no time for home-production or no time for market labour are much more likely to happen.

Comparative statics within this approach now will be discussed in selected respects: First the effect of variations in non-labour income, the effects of changing real wages at second, third variations in productivity in home-production or consumption technology, forth the extension of these effects to a two commodities analysis and finally initial considerations of extending the model to the multi-person case.

An increase in non-labour income  $[\Delta V]$  shall be assumed. This increase assures the agent the equivalent in market goods (the amount of  $[x_0]$ ) even if he/she spends all his/her time in leisure. So this change  $[\Delta V]$  is reflected by a vertical shift of the home production function with the well known consequence that just the income effect will occur: As neither prices nor marginal productivity are influenced by this shift, work will be traded in favour of leisure. Which kind of work being effected depends on the initial situation. If the agent was in market work before, he/she will try to reduce the market work  $[N]$  leaving home production  $[H]$  unchanged. In the case the agent has decided to work entirely in home production before, this activity will be reduced by partly outsourcing to market transactions and leaving market labour supply constant at zero level. The one and only case both forms of work are reduced is the following: If the increase in non-labour income is sufficiently high and/or the initial market labour participation has been sufficiently low, the agent will – first – withdraw his/her market labour supply entirely and – then – substitute some home-production by market goods and services. So the reaction of the agent consists in a shift of activities to the right with a sequential reduction of market labour and home production<sup>18</sup>.

<sup>16</sup> This case was often presumed when analysing men's labour supply.

<sup>17</sup> In rather historical papers often presumed in the case of women's labour supply.

<sup>18</sup> This issue has wide political impact. In widening public transfers (say transfers combined with parental leave) shift the home production function upwards. So, at the margin, parental leave programmes which are intended to hold the employees – exclusively according to their preferences – in some relation to the labour market have to fail! First the need for home production rises significantly with a small child and second market work is tended to be reduced by the amount of the transfer.

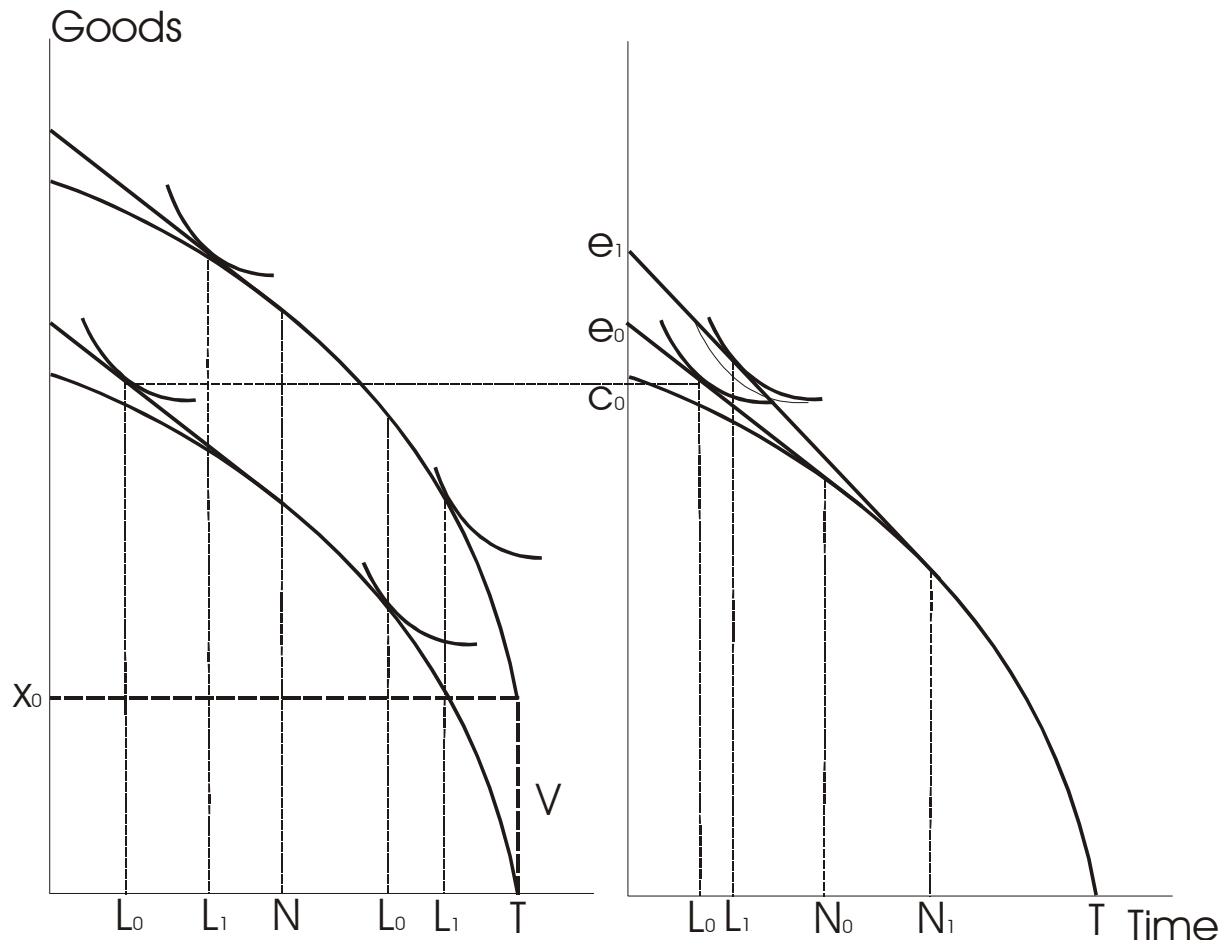


Figure 3: market labour supply, home production, and leisure  
(a) with variations of unearned income, or  
(b) with variations in market wages

Within the second scenario let there be an increase in real wage rate. In this case income as well as substitution effects come to action. Not just the marginal rates of substitution between market goods and consumption time are affected, also the profitability of home production gets reduced. So, in case of a real wage increase the effect on home production is clearly negative, the effect on leisure remains indeterminate, depending on the extent of relevant income and substitution effects. The effect on market labour is indeterminate too. If the reduction of home production exceeds the increase in leisure – given there is one – the supply of work in the market increases. So activities shares shift to the right, see Figure 3(b). In case of a reduction in leisure market work expands in both directions. The tendency of this supply curve to be positively sloped increases, the greater the rate of substitution between goods and leisure, the less sensitive the marginal productivity in home production to input time variations, and the smaller the income elasticity of leisure.

Given the agent does not offer work in the market initially, the real wage change can lure him/her into the market or keep him/her totally unaffected.

Third scenario: Implications of changes in the agent's technologies are impossible to predict without accurate specification of these technologies. In case of productivity increases in home production technology and given the agent works in the market initially the agent's real income rises. This induces an increase in consumption time (leisure), the effect of work at home and work in the market stays indeterminate. Given this agent does not offer work in the market initially, the effect on leisure can as well be negative, depending on the net outcome from substitution and income effect. In case of variations in consumption technology leisure and market work will be affected, the direction of reaction again stays indeterminate. Home production will be left unchanged.

Let us now assume – forth scenario – costs for labour market entries that are, for simplicity reasons, independent of the amount of work  $[n]$ . In fact, work in the market involves some costs in terms of both money  $[c]$  and time  $[t]$  modifying the budget and time restrictions to

$$\begin{aligned} (2) \quad & x_m + \delta c = wN + V \\ (3) \quad & L + H + N + \delta t = T \\ & N = 0 \Rightarrow \delta = 0 \\ & N > 0 \Rightarrow \delta = 1 \end{aligned} \quad [2.1a]$$

The agent faces two opportunity sets: Staying out of labour force he/she confines him/herself to home production, so any combination up to the home production function is feasible  $[TB_1E]$ . Deciding to join the labour force, he/she suffers a loss time  $[\delta t]$  and  $[\delta c]$  units of goods but his/her opportunity shifts to  $[T'AB_0F]$ . Agents who try to increase their amount of goods and services over the point they could have gained solely by home production  $[G]$  will prefer this setting exchanging  $[x_0 - x_1]$  more goods for  $[l_1 - l_0]$  less leisure and now have to work  $[n - l_0]$  hours in the market and to reduce home production by  $[t]$  that translated to a loss in  $[c]$  home made products. Therefore labour force participation will be associated with a decline both in leisure and home production.

Insofar the main findings of the described model should be (by and large) consistent with empirical stylised facts. A wide range of interdependent hypotheses were added for testing: An increase in wage rates should not affect the time allocation of individuals out of labour force<sup>19</sup> but reduce work at home of the employed<sup>20</sup>, regardless of the net amount of substitution and income effect. Thus, in general, a negative correlation of real wage rate and home production is expected. The effect of a change in real wages on leisure depends on the relative magnitudes of income and substitution effects. The tendency for the income effect to dominate increases with the hours already spent in the labour market. Thus, it is not surprising that the substitution effect is the dominant factor of wife's leisure but the effects cancel out – often the income effect dominates – in case of the husbands'. An increase in non-wage income should not effect home production of the employed but reduce home production of the non-employed. Consequently, non-wage income is expected to be negatively correlated with (the wife's) home production time. In case of men the negative effect should be much less pronounced or even insignificant. Non-wage income and leisure are positively correlated, regardless of labour force participation. The presence of market entry costs – employed persons spend less time on home production – should induce changes in market labour supply. As the simplifying assumption of fixed entry costs is just partly reflected in the data<sup>21</sup>, variations in working hours superpose differences in home production predicted by this model.

## 2.4 Family decisions as a bargaining problem

Contrary to the fundamental assumption of the unitarian approach stating that family members are in total agreement about all relevant decisions a priori, the bargaining approach assumes that family members negotiate to reach an agreement compromising different, sometimes contrary individual preferences. There is some chance that joint household utility functions can be derived from the outcome of the negotiation process, but unitarian utility functions are too rigid to be assumed a priori. Instead game theoretical models based on individuals' utility functions seem to be much more appropriate to illustrate intrafamily decisions. These models focus on the intrafamily resource allocation assuming that cooperative behaviour increases welfare production. **Formel-Kapitel (nächstes) Abschnitt 3**

<sup>19</sup> still far more women – focusing on age cohorts relevant for labor force

<sup>20</sup> whereas women obviously have some chance to choose whether to participate in the labour market according to their preferences, men have seemingly not; this stylised fact is reported all over western countries, differences in the extent of this 'specialisation due to gender' will be discussed later

<sup>21</sup> transportation costs can be assumed as fixed, other costs vary with the amount of working hours

### 2.4.1 Basic idea

Within the unitarian approach intrafamily work divisions are the main elements of gain from marriage. Marriage is treated as a long-term contract between partners. However, negotiation proceedings as well as the elements of the contract are not investigated any further. Referring to Pollak's transaction cost approach (Pollak 1985), originally developed for the analysis of firms, it is considered that the exchange of goods and services can not be done for free: First the information on the characteristics of the good is incomplete, second exchange takes place over a long period so it has to be renegotiated from time to time, and third production depends on specific human capital that has to be built up and that is profitable only through long-term guaranteed returns. Information costs, negotiation costs, and costs of enforcement can only be reduced efficiently by agreeing on long-term binding contracts. The family is an institution that meets these requirements and it can be defined as organisation of exchange where – compared to single individuals – at least three types of additional surpluses are generated by the long-term contracts:

Production surplus – family members specialise in certain activities. Via intrafamily trade these specialised products increase the wealth of all family members

- Consumption surplus – certain intrafamily public goods can be consumed jointly at declining costs by economies of scale
- Insurance surplus – the family produces security through exchange of mutual promises for aid.

These surpluses tend to increase with the duration of a partnership as the need and costs for gathering information on the partner's preferences and abilities as well as renegotiation procedures decline while – at least – specialisation increases. These surpluses can arise in every household, regardless of its type (family vs. housing community). In addition family specific goods like emotional security are obtained in long lasting partnerships. Affections lead to altruistic behaviour and increase the partners' trust so that information and monitoring cost are reduced again.

For these reasons the formation and stability of partnerships and families seem to be more important than the unitarian approach suggests. Game theoretical models are far more promising approaches in these respects.

### 2.4.2 Household decisions as a cooperative game

Based on the seminal papers of Manser/Brown (1980) and McElroy/Horney (1981) the cooperative approach according to the well known Nash solution is used for further analysis. Assuming two entirely selfish agents<sup>22</sup>, simply called m(ale) and f(emale), endowed with continuous and globally concave utility functions and constrained by a quasi-convex set of private goods, the Nash solution is characterised by cooperative gain sharing in order to maximise the product of the two individual gains.

$$\max_{\mathbf{x}^m, \mathbf{x}^f} [(U^m(\mathbf{x}^m) - D^m) * (U^f(\mathbf{x}^f) - D^f)] \quad [3.1]$$

subject to

$$\begin{aligned} (\mathbf{x}^m + \mathbf{x}^f)' \mathbf{p} &= y \\ (U^m, U^f) &\in P \\ U^i &\geq D^i \end{aligned} \quad [3.2]$$

where

- $U^i$  Agent i's payoff (=utility level) when partners agree on a feasible set  
 $\mathbf{x}^i$  vector of i's (private) goods

<sup>22</sup> For simplicity no altruism is taken into this model. Generally altruism causes serious feedback loops within game theoretical models. Total income pooling is assumed and there are neither household public goods nor time allocations considered in this stage.

- $y$  total income  
 $D^i$  Agent  $i$ 's payoff (=utility level) when partners do not agree → defection point  
 $P$  payoff space (feasible sets of utility pairs)  
 $p$  price vector

The Nash product of utility levels has to be located within the feasible set below or on the Pareto line. Figure 4 illustrates the solution: the axes – the two individual utility levels – are scaled ordinally, the Pareto frontier of feasible utility sets is the quasi-concave function  $P$  between the maximum outcomes in either's respect,  $U_{m|max}$  and  $U_{f|max}$ . Each agent would gain  $D^i$  on his/her behalf, so neither of the two is prepared to achieve less within a partnership. The outcome of the negotiation has to lie beyond the agents' defection lines. The negotiation set is the part of the Pareto frontier between  $A$  and  $B$ . Geometrically, the Nash solution is identified by the tangential point  $C$  of the Pareto frontier and the (maximised) hyperbola  $N$ . Analogously the tangential point  $C$  is defined as the location with maximum sum of distances to the respective defection lines. For this reason the negotiation outcome has to be unique and is determined by the agents' preferences and endowments. The hyperbola  $N$  approaches asymptotically to the respective defection levels. The curvature of the hyperbola does not just depend on the location of the defection lines but also on the relative bargaining power of the agents. Hence the defection point  $D$  plays a dual role in the bargaining process: Either it determines the outcomes in case of conflict or – according to the rules of game – the distribution of outcomes.

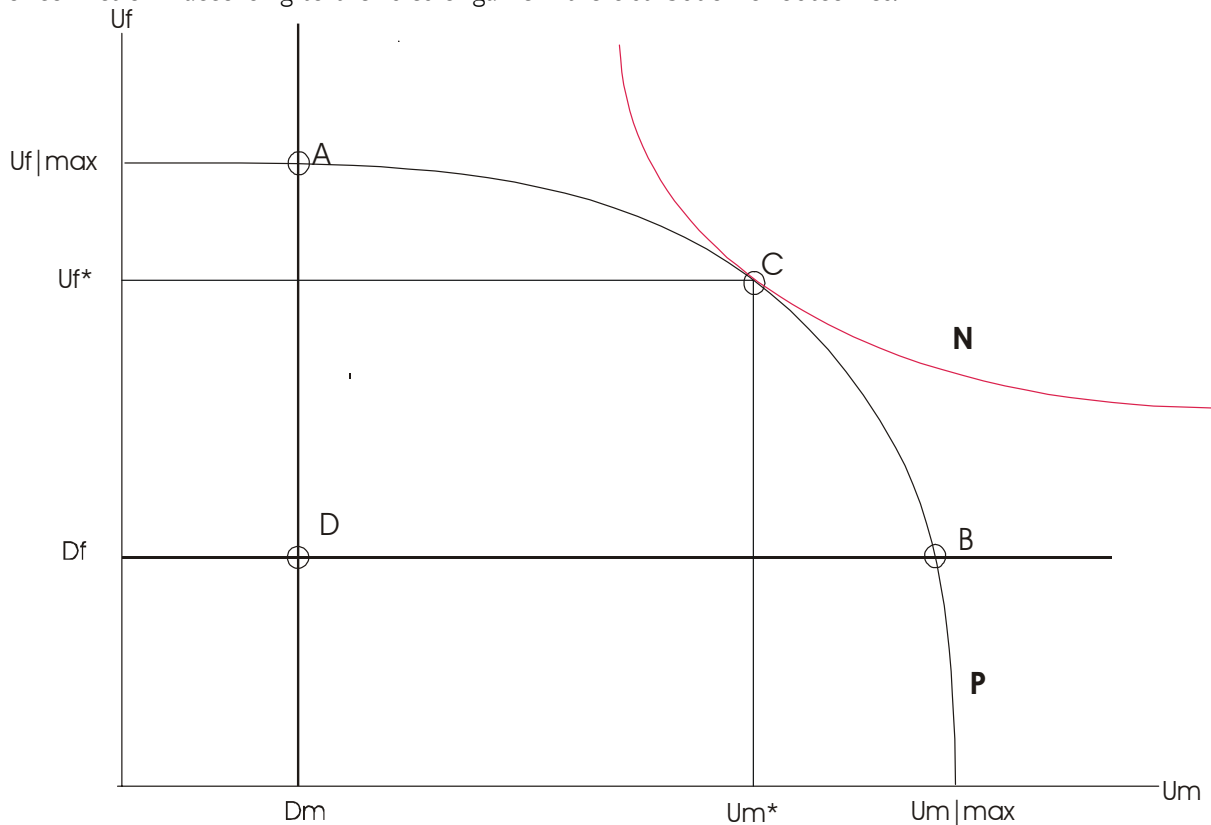


Figure 4 : General Nash solution to a cooperative game

### 2.4.2.1 Comparison to traditional approaches

Compared to traditional household models the bargaining approach just differs in the objective function while budget and time constraints stay identical. As the goods are private and no household public goods have been introduced yet, these goods can also be treated as separate arguments in a traditional household utility function. The Nash function can be regarded as a specific function within this class, but exhibits crucial advantages: the derivation of a 'household utility function' is not covered in a black box but embedded within a system of rational negotiations. In fact, when setting the conflict levels  $D$  exogenous and fixed, the bargaining model yields the same results as traditional models: The agent's first order conditions of the maximisation [3.1] subject to [3.2] are standard

$$\frac{\partial U^i}{\partial x_k^i} (U^j - D^j) = \lambda p_k \quad [3.3]$$

$$(\mathbf{x}^m + \mathbf{x}^f)' \mathbf{p} = y$$

leading to the well known result that the marginal rate of substitution between two goods equals their economic rate of substitution – the price ratio.

$$\frac{\partial U^i / \partial x_k^i}{\partial U^i / \partial x_l^i} = \frac{p_k}{p_l} \quad [3.4]$$

In addition, the division of the cooperation surplus depends on the location of the defection levels: the net gain of cooperation is shared proportionally to the marginal rate of substitution (MRS) of any good analysed.

$$\frac{\partial U^f / \partial x_k^f}{\partial U^m / \partial x_k^m} = \frac{U^f - D^f}{U^m - D^m} \equiv - \frac{\partial U^f}{\partial U^m} \quad [3.5]$$

Analysing the trade off between two private goods of each partner, the optimum division of surplus is proportional to the MRS weighted by the inverse price ratio. The ratios in [3.5] and [3.6] represent the marginal rate of utility transfer (MRUT) that is equivalent to the slope of the Pareto frontier in the optimum. The (amount of the) slope diminishes, as the defection level of the partner – whose utility level forms the numerator – diminishes. The value of the MRUT is an analytical measure of the partners' relative bargaining power.

$$\frac{\partial U^f / \partial x_k^f}{\partial U^m / \partial x_l^m} \frac{p_l}{p_k} = \frac{U^f - D^f}{U^m - D^m} \equiv - \frac{\partial U^f}{\partial U^m} \quad [3.6]$$

The effect is depicted in Figure 5: As the out-of-partnership opportunities of the female agent have risen from  $D^f$  to  $D^{f'}$ , her bargaining position has improved. Due to decreasing marginal utility, the slope of her MRUT – equivalent to the slope of the diagonal of the rectangle embedded between the agent's threat lines and the utility levels agreed on – flattens, so now, from the new cooperative optimum  $C'$  additional utility can be transferred to the female agent at higher costs (by means of reduced male's utility) than from the original point of agreement  $C$ . In this case the male agent seems to have lost more utility as the female agent has gained but the distance from the new point of agreement to his defection level is still considerably larger than to the female's threat line. The curvatures of both hyperbolas underline this observation: the male agent seems to have a higher "individual" negotiation power that is independent from his outside opportunities. Although individual bargaining power is added within some behavioural models of cooperative bargaining<sup>23</sup>, comparisons of the agent's utility levels as well as the distances to their defection levels just have limited meaning due to the ordinal character of utilities.

<sup>23</sup> For instance mentioned in Camerer (2003)

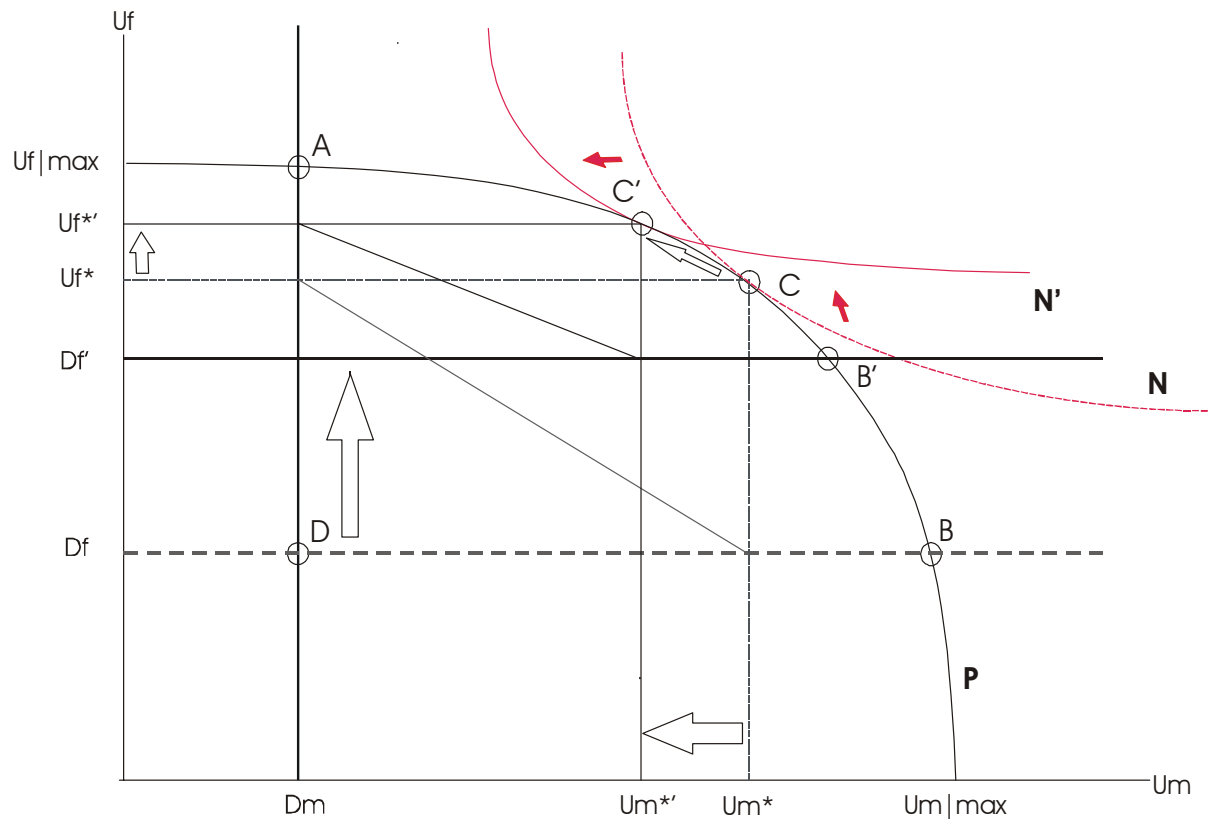


Figure 5 : Shifts of the Nash solution due to an exogenous increase of female's defection level

In case of price changes<sup>24</sup> concerning a private good of one agent, income and substitution effects work as usual. In addition, as the space of feasible sets has shifted asymmetrically – just one agent benefits/loses from the price variation – renegotiation follows these exogenous changes. So a price variation also induces a bargaining effect that shifts the Nash solution in favour of the agent whose situation improved<sup>25</sup>.

#### 2.4.2.2 Static model with time allocation

So far “just” goods bought on the market were considered. Having discussed the main characteristics of the extension from a single individual's standard maximisation problem to an optimisation procedure with two cooperative agents, the implementation of this game setting into a Gronau-type household production approach becomes feasible: Again, it is assumed that market goods cannot be consumed directly, they have to be “prepared to consumable commodities” by the agent's home production. The central input in this process is ‘time’. For instance: Time to buy the components of the commodity “dinner for tonight”, time to prepare the meal, time to consume it, time to wash the dishes etc.. Some of these activities can be replaced by merchantable services – for instance a housekeeper could be hired, who does the shopping, cooking and dish-washing, but at least the agents have to eat for themselves and as a consequence have to spend some time on this activity. As the agents behave rationally, the combination of home production and market goods and services with lowest opportunity costs is chosen. To keep the initial approach simple, process benefits are kept neglected. So – at this stage – neither positive nor negative utilities are gained from working or from executing home production duties. Enjoying leisure is the only activity with a direct influence on the agent's utility.

As the general utility function has changed now from  $U(\mathbf{x})$  to  $U(C, L)$ , the agents do not gain their utility directly from a vector of goods bought on the market (at no transaction costs), but have to

<sup>24</sup> See Ott (1992) p. 40 ff for a detailed discussion

<sup>25</sup> The case of an income variation is not relevant, as incomes are assumed to be perfectly pooled.



produce their utility-deriving commodities<sup>26</sup> and save time for leisure. So the means of optimisation are no longer market goods ( $\mathbf{x}$ ) but the activities leisure, work, and home production ( $\mathbf{L}; \mathbf{N}; \mathbf{H}$ ). The maximisation problem [3.1] changes to

$$\max_{L^i, N^i, H^i} [(U^m(C^m, L^m) - D^m) * (U^f(C^f, L^f) - D^f)] \quad [3.7]$$

subject to

$$\begin{aligned} C^m + C^f &= z(a^m H^m + a^f H^f, y(w^m N^m + w^f N^f + V^m + V^f)) \\ N^i + H^i + L^i &= T \quad (i = m, f) \\ C^i &> 0; L^i > 0; H^i \geq 0; N^i \geq 0 \end{aligned} \quad [3.8]$$

Note that the non-negativity constraints “force” the agents to consume some commodities and to take some leisure<sup>27</sup>, but – like in the unitarian home production approaches – it is possible that agents do not spend any time for market work or home production respectively. Incomes stay entirely pooled at this stage. The conflict outcomes result from the usual optimization procedure of a single agent unit. Each agent considers his/her defection level at:

$$\begin{aligned} D^i &= \max_{L^i, N^i, H^i} U_s^i(C_s^i, L_s^i) \\ \text{s.t. } C_s^i &= z(a_s^i H_s^i, y(w^i N_s^i + V^i)) \\ N_s^i + H_s^i + L_s^i &= T \\ C_s^i &> 0; L_s^i > 0; \\ H_s^i &\geq 0; N_s^i \geq 0 \end{aligned} \quad [3.9]$$

Following the Kuhn-Tucker theorem [3.7] and [3.8] are composed to the Lagrangian

$$\begin{aligned} \mathcal{L} &= U^m(C^m, L^m) - D^m * (U^f(C^f, L^f) - D^f) \\ &+ \lambda(z(a^m H^m + a^f H^f, y(w^m N^m + w^f N^f + V^m + V^f)) - (C^m + C^f)) \\ &+ \mu^m(T - N^m - H^m - L^m) + \mu^f(T - N^f - H^f - L^f) \\ &+ \nu^m H^m + \sigma^m N^m + \nu^f H^f + \sigma^f N^f \end{aligned} \quad [3.10]$$

that infer to following first order conditions<sup>28</sup>:

<sup>26</sup> Although commodities consist of the vectors of market goods and services and the vector of home production services, commodities are a function of these elements. So – with no loss of generality – the agents’ commodities can be represented as a scalar instead as a multidimensional matrix.

<sup>27</sup> As sleeping, eating and personal care duties are no separate category, this assumption is well-grounded. This setting goes back to Lancaster (1966), where leisure is equated with consumption time.

<sup>28</sup> As some conclusions are quite opposed to standard textbook models, this section is treated step by step in textbook style.

$$\begin{aligned}
[1] \quad & \frac{\partial \mathcal{L}}{\partial C^i} = \frac{\partial U^i}{\partial C^i} (U^j - D^j) - \lambda = 0 \\
[2] \quad & \frac{\partial \mathcal{L}}{\partial L^i} = \frac{\partial U^i}{\partial L^i} (U^j - D^j) - \mu^i = 0 \\
[3] \quad & \frac{\partial \mathcal{L}}{\partial H^i} = \lambda \frac{\partial z}{\partial (a^i H^i + a^j H^j)} a^i - \mu^i - \nu^i \equiv \lambda z_{\bar{H}} a^i - \mu^i - \nu^i = 0 \\
[4] \quad & \frac{\partial \mathcal{L}}{\partial N^i} = \lambda \frac{\partial z}{\partial y} \frac{\partial y}{\partial (w^i N^i + w^j N^j)} w^i - \mu^i - \sigma^i \equiv \lambda z_y y_{\bar{N}} w^i - \mu^i - \sigma^i = 0 \\
[5] \quad & \frac{\partial \mathcal{L}}{\partial \lambda} = z(a^m H^m + a^f H^f, y(w^m N^m + w^f N^f + V^m + V^f)) - C^m - C^f = 0 \\
[6] \quad & \frac{\partial \mathcal{L}}{\partial \mu^i} = T - N^i - H^i - L^i = 0 \\
[7] \quad & \nu^i H^i = 0 \\
[8] \quad & \sigma^i N^i = 0
\end{aligned} \tag{3.11}$$

Like in standard approaches  $\lambda$  is the marginal utility of income,  $\mu^i$  denotes the agents' marginal utility of time,  $\nu^i$  and  $\sigma^i$  are the Kuhn-Tucker operators for boundary solutions in home production and market labour. The first order conditions lead to following relationships:

$$\frac{\partial U^i / \partial C^i}{\partial U^j / \partial C^j} = \frac{(U^i - D^i)}{(U^j - D^j)} \tag{3.12}$$

Regardless of the fact that a change in personal commodities of one agent does not necessarily change the amount of the identical commodity of the other, price and effort differences should be added. The result is comparable to the initial approach [3.5]. In the optimum the division of the cooperation surplus primarily depends on the location of the defection levels: the net gain of cooperation – the MRUT – is shared proportionally to the MRS of 'the' commodity.

$$\frac{\partial U^i / \partial L^i}{\partial U^j / \partial L^j} = \frac{\mu^i (U^i - D^i)}{\mu^j (U^j - D^j)} \tag{3.13}$$

According to [3.4] leisure will be adjusted to equalise the ratio of marginal utilities from leisure and commodities to the (individual's) "price ratio" – the ratio of marginal utility of time and of income.

$$\begin{aligned}
\frac{\partial U^i / \partial L^i}{\partial U^i / \partial C^i} &= \frac{\mu^i}{\lambda} \\
&= \frac{\partial z}{\partial (a^i H^i + a^j H^j)} a^i + \nu^i \equiv z_{\bar{H}} a^i + \nu^i \\
&= \frac{\partial z}{\partial y} \frac{\partial y}{\partial (w^i N^i + w^j N^j)} w^i + \sigma^i \equiv z_y y_{\bar{N}} w^i + \sigma^i
\end{aligned} \tag{3.14}$$

This price ratio has to equate the marginal product of home production itself and/or the marginal product of the marginal income – both weighted by their efficiency  $a^i$  and  $w^i$ . So three types of specialisation can be identified: First, the case where the marginal product of an additional hour of market work is exactly equal to the marginal product of an additional hour of housework and both are equal to the MRS between leisure and consumption shown in [3.15]. The agent will engage in market work as well as in home production.

$$z_y y_{\bar{N}} w^i = \frac{\partial U^i / \partial L^i}{\partial U^i / \partial C^i} = z_{\bar{H}} a^i \quad [3.15]$$

Given that wages have risen considerably or a household production technology has been introduced that increases output by substituting home production with services bought on the market, the agent will specialise entirely on market work. Only in this point the agent reaches the optimal MRS.

$$z_y y_{\bar{N}} w^i = \frac{\partial U^i / \partial L^i}{\partial U^i / \partial C^i} > z_{\bar{H}} a^i \quad [3.16]$$

The opposite case occurs when wages fall and/or home production efficiency rises: The agent will concentrate on home production and quit the labour market.

$$z_y y_{\bar{N}} w^i < \frac{\partial U^i / \partial L^i}{\partial U^i / \partial C^i} = z_{\bar{H}} a^i \quad [3.17]$$

Up to that point the single agent's behaviour was examined. When considering two agents differences in hourly wages occur, so that  $w^i < w^j$ . As both partners have agreed on a unique home production technology, the outcome in terms of commodities produced rises monotonically with the wage rate.

$$z_y y_{\bar{N}} w^i < z_y y_{\bar{N}} w^j \quad [3.18]$$

In case of identical productivity in home production ( $a^i = a^j = a$ ) this relationship holds true. Either the agent with the lower wage rate will be engaged in both, market work and home production while the partner with the higher market revenue will specialise entirely in market work

$$z_y y_{\bar{N}} w^i \leq z_{\bar{H}} a < z_y y_{\bar{N}} w^j \quad [3.19]$$

or the agent with the lower wage will specialise entirely in home production while the agent with the higher wage can do both.

$$z_y y_{\bar{N}} w^i < z_{\bar{H}} a \leq z_y y_{\bar{N}} w^j \quad [3.20]$$

Anyway in this case the most likely solution is the entire specialisation of both agents on 'opposite' activities. In case of a higher productivity in home production of the agent with the higher market rate ( $a^i < a^j$ ) this outcome clarifies to

$$z_y y_{\bar{N}} w^i \leq z_{\bar{H}} a^i < z_{\bar{H}} a^j \leq z_y y_{\bar{N}} w^j \quad [3.21]$$

Still the agents will specialise. The decision who specialises in market work and who does in home production will depend on the home production technology.

All these properties of the cooperative approach are just a basic outline of the underlying models by Manser/Brown (1981) and McElroy/Horney (1981). These approaches can be developed further to obtain variants of the Stutsky matrix with the well known separation in income and substitution effects in commodity space, additionally a bargaining effect, a welfare effect and a substitution effect in utility space can be worked out. With these analytical tools reconsidered the models even can cross the border from comparative statics to a dynamic approach. Within the dynamic approach of course human capital strategies start playing a central role. Second, the dynamic approach allows to model fecundity, that is already implemented within the agents' genuine utility function, and their realised fertility.

All in all the cooperative approach is an integrative instrument that allows to treat all relevant question in the field of the family within one theoretical model. The main disadvantage of this approach is the fact, that it – like all game theoretical approaches – just has poorly developed empirical instruments to test its results.

### 2.4.3 Household decisions as a non-cooperative game

First, non-cooperative game theoretical approaches were introduced. In this kind of settings, generally, players are unable to agree on binding contracts and therefore can not make any credible promises as commitments are not enforceable. Given an equilibrium point – e.g. a Cournot-Nash equilibrium – is reached, neither agent has an incentive to deviate. This equilibrium does not need to be Pareto-dominant. Further, the set of equilibrium points normally contains more than one solution, so additional roles on identifying and eliminating implausible equilibrium points have to be introduced.

Given that agents do not choose their strategies simultaneously and independently the setting starts to become dynamic. Additional criteria of sub-game perfectness are required. Although the agents' bargaining process (action, reaction, and learning processes) can only be depicted a consecutive dynamic approach, comparably more straightforward static models are sufficient in many questions. For that reason non-cooperative games with unique solutions have been preferred in modelling household decisions. Still, it is not entirely clear what a non-cooperative partnership is: basically agents decide to cooperate in some respects when forming a partnership. Or – argued the other way – the rationale of forming and splitting partnerships is not clear, or just reduced to intra-household-public-goods' cost-sharing.

For the case of no private consumptions goods (just labour supply and leisure are private) within the household, the optimisation problem could be formulated as a system of simultaneous equations:

$$\begin{aligned} \max_{\mathbf{x}, l^m} U^m(\mathbf{x}, l^m) \quad & \max_{\mathbf{x}, l^f} U^f(\mathbf{x}, l^f) \\ \text{s.t. } x & \leq w^m(T - l^m) + w^f(T - l^f) + I \end{aligned} \quad (3.22)$$

This approach differs from unitarian models only in the kind of determination of labour supply. All other decisions are implicitly assumed to be settled following some consensus. This approach can be widened to environments with public and private consumption goods, consequently with individual budget restrictions, with no additional analytical insight. Also approaches with interdependent utilities do not solve the central question, why a partnership should be formed, unless some decisions are met jointly. Nevertheless, models with individual utility function can explain observed behaviour better than traditional approaches with one joint utility function.

Proponents of the non-cooperative approach argue that disagreement on resource allocation does not directly lead to divorce but to individual decisions on resource allocation instead. This lead to approaches that combine cooperative and non-cooperative models sequentially (Lundberg/Pollak 1993,1994,1996): A partnership starts as an entirely non-cooperative game. As partners learn to know each other, rules for cooperation are developed, so – in a growing number of respects – cooperation starts. When partners loose their trust in each other, the partnership is not split automatically, but the respects of the cooperative partnership where trust is lost, change again to non-cooperative rules. That way either new binding rules can be developed, the non-cooperative situation can persist or the partnership can end. This way the non-cooperative approach can serve as useful extension of the cooperative approach.

### 2.4.4 Collective models of household behaviour

The lack of testability and falsifiability of the cooperative bargaining approach motivated the development of a new branch of models: The models of collective decision, developed mainly by Pierre-André Chiappori<sup>29</sup>. Here the analysis focuses on Pareto efficiency, which is a trait of all cooperative approaches.

<sup>29</sup> Chiappori has written several seminal papers about the collective labour supply. Most relevant are : Chiappori, P.-A. (1988) "Rational household labor supply"; Econometrica 56-1; pp. 63 - 89, Chiappori, P.-A. (1992) "Collective Labor Supply and Welfare"; The Journal of Political Economy 100-3; pp. 437 - 467, Chiappori, P.-A. and M. Browning (1998) "Efficient Intra-Household Allocations: A General Characterization and Empirical Tests"; Econometrica 66-6; pp. 1241 - 1278, Chiappori, P.-A., et al. (2002) "Marriage market, divorce legislation, and household labor supply"; The Journal of Political Economy 110-1; pp. 37 - 72 ; The

Chiappori points out that if the conflict border can not be observed, the only testable property of the bargaining model is Pareto efficiency. With Pareto efficiency assumed, it is possible to test collective decisions against the outcomes of unitarian models. The intra-family resource allocation gets out of scope.

Chiappori then specifies some conditions as well as their parametric and non-parametric tests for a collective household. These can be summarised to two central claims:

- The models have to generate testable restrictions and as a consequence must be falsifiable (testability requirement) and
- the models must allow to recover individual preferences as well as the decision making process (integrability requirement).

A general framework, where the household consists of two members,  $A$  and  $B$ , with respective preferences  $U^A$  and  $U^B$  is considered.  $N$  goods are public,  $n$  goods are consumed privately. These privately consumed goods can be distinguished into exclusive (a good which can be consumed by one agent only), assignable (a good where each member's consumption can be observed independently) and non-assignable goods. Further egoistic, altruistic and caring types of agents are distinguished. A kind of welfare index is maximised that depends both on one member's 'egoistic' utility as well as her/his companion's. The preferences take the form

$$\begin{aligned}
 & W^A[U^A(x^A, X), U^B(x^B, X)], W^B[U^A(x^A, X), U^B(x^B, X)] \\
 & s.t. \quad p \cdot (x^A + x^B) + P \cdot X = y \\
 & x^A = (x_1^A, \dots, x_n^A), x^B = (x_1^B, \dots, x_n^B)
 \end{aligned} \tag{3.23}$$

Chiappori (1988ff) then defines assumptions made on the decision making process. First – comparable to [3.9] – for each agent a single state welfare level is calculated in order to define the threat points. The surplus arising from cooperation is shared geometrically between the members.

Models of collective decisions emphasise on testability and integrability: A theoretical model becomes testable when its outcomes can be falsified empirically. In order to support a collective decision model empirically, potentially falsifiable conditions have to be set up that actually are not falsified by empirical observations. In addition, the integrability property has to be satisfied, so preferences and decision processes should be uniquely recoverable. Integrability is an even stronger requirement than identifiability, where, given the initial functional form, the parameters can uniquely be recovered, as it is possible that two functionally different structural models lead to the same functional form for demands.

Recent models are based upon the assumption that all outcomes are Pareto efficient although no assumption is made about the decision making process. Prices are considered to be equal across all households, while incomes vary. Utilities are either egoistic or caring and it is assumed that only private goods exist. The most popular collective of models are the 'models of collective labour supply', where each agent's labour supply is supposed to be freely chosen and observable. Labour supply is an exclusive good. In the simplest case there is only a single (aggregate) consumption good. Testable restrictions upon the labour supply function are derived. The income sharing rule can be recovered from labour supplies up to an additive constraint. Each member's utility can be recovered as well. The model can be extended to more goods and to altruistic behaviour. Of course each of these steps shows several limitations.

Another widely used category of collective models are the 'Consumption models with exogenous incomes'. It is assumed that there are two (exogenous) sources of income,  $y^A$  and  $y^B$ . In a collective



model consumption may depend independently on  $y^A$  and  $y^B$  and testable restrictions can be derived. If one agent's private consumption of one good can be observed the sharing rule can be recovered to some extent. If it can be observed for both members the sharing rule can be recovered up to a constant.

### 3 Bibliography: Developments in “family economics”

#### 3.1 Ancient developments that lead to New Home Economics

**Kapteyn, Arie, et al.** (1990): "Quantity Rationing and Concavity in a Flexible Household Labor Supply Model";

[Wage rates, Utility functions, Studies, Statistical analysis, Shadow prices, Labour supply, Households, Economic theory, Economic models, Research, Labour force, Income, Economic statistics]

Explicit expressions are derived for the direct utility function, conditional demand equations, and concavity conditions in both price/income and quantity space for the demand system introduced by Hausman and Ruud (1984). These results are then utilised in an empirical static family labour supply model in which kinked budget constraints and unemployment benefits are taken into account for both spouses. Imposition of concavity is necessary for consistent estimation and the concavity constraint appears to be binding. Modelling household labour supply under different regimes requires the use of shadow prices if researchers wish to work with specifications that are given in dual form.

**Kapteyn, Arie, et al.** (1997): "Interdependent preferences: An econometric analysis";

[Studies, Economic theory, Econometrics, Economic models, Consumption, Households]

The theoretical model of Gaertner (1974) and Pollak (1976) for the interdependence of preferences in the Linear Expenditure System is estimated for a cross-section of households. The interdependence of consumption of different households has implications for the stochastic structure of the model and for the identifiability of its parameters. Both aspects are dealt with. The empirical results indicate a significant role played by the interdependence of preferences. One of its implications is that predictions of the effects of changes in a household's exogenous variables differ according to whether the exogenous variable only changes for this household or for all households jointly.

**Killingsworth, Mark and James J. Heckman** (1986): "*Female Labor Supply: A Survey*";

[labour supply, wage equation]

James Heckman and Mark Killingsworth examine the evidence using a host of different approaches to explain the division of women's time between paid work and other activities. Of course, much of the variation in female labour supply is not explained by wages and income, but by changes in family status.

**Lancaster, Kelvin J.** (1966): "A New Approach to Consumer Theory";

[Consumer theory, Microeconomic Theory, Theory of the household, Consumer behaviour, Consumption]

The theory of consumer behaviour in deterministic situations as set out by, say, Debreu (1959, 1960) or Uzawa (1960) is a thing of great aesthetic beauty, a jewel set in a glass case. The product of a long process of refinement from the nineteenth-century utility theorists through Slutsky and Hicks-Allen to the economists of the last twenty-five years,[1] it has been shorn of all irrelevant postulates so that it now stands as an example of how to extract the minimum of results from the minimum of assumptions. In this model we have extended into consumption theory activity analysis, which has proved so penetrating in its application to production theory. The crucial assumption in making this application has been the assumption that goods possess, or give rise to, multiple characteristics in fixed proportions and that it is these characteristics, not goods themselves, on which the consumer's preferences are exercised. The result, as this brief survey of the possibilities has shown, is a model very many times richer in heuristic explanatory and predictive power than the conventional model of consumer behaviour and one that deals easily with those many common-sense characteristics of actual behaviour that have found no place in traditional exposition. This paper is nothing more than a condensed presentation of some of the great number of possible ways in which the model can be used. It is hoped that a door has been opened to a new, rich treasure house of ideas for the future development of the most refined and least powerful branch of economic theory, the theory of the consumer himself.

**Samuelson, Paul** (1956): "Social Indifference Curves";

[Family preferences, joint utility functions, intra-family income redistribution]

Samuelson shows that various attempts for building up social indifference curves, especially those of the Scitovsky-type, have to fail. As social indifference curves lack the attribute of transitivity it is 'absolutely impossible to solve for unique market price ratios in function of market totals'. But, since most "individual" demand is really "family" demand, there can be 'assumed to take place an optimal reallocation of income so as to keep each member's dollar expenditure of equal ethical worth'. So there can be derived a set of well-behaved indifference contours relating the totals of what it consumes. The family can be said to act as if it maximises a group preference function. The vital difference between a family and other groups is that within a family some norms of ethical worth exist and can be sanctioned in some way. If and only if this attribute relates to a specific group, this group's indifference contours will not intersect and well defined price ratios of all resources (including labour, income from various sources and consumption goods) will exist.

This article has become a seminal paper of collective decision within a family context, but the striking question of this article was how to exclude families from the "impossibility theorem" Samuelson formulated as replique to Scitovsky's theory of the existence of social indifference contours in general. Just besides Samuelson asked the fundamental question of how decisions are drawn within a family context. He did not some "benevolent dictator" - approach, Becker e.a. used afterwards. Instead he formulated: 'Of course, we might try to save the conventional theory by claiming that one titular head has sovereign power within the family and all of its demands reflect his (or her) consistent indifference curves. But as casual anthropologists we all know how unlikely it is in modern Western culture for one person 'to wear the pants'. It is perhaps less unrealistic to adopt the hypothesis of a consistent 'family consensus' that represents a meeting of the minds or a compromise between them.' In this paragraph the often cited starting point for the game-theoretic analysis of family behaviour was set.

**Scitovszky, T.** (1941): "Note on Welfare Proposition in Economics";

Modern economic theory draws a sharp distinction between positive economics, which explains the working of the economic system, and welfare economics, which prescribes policy. In the domain of welfare economics the impossibility of interpersonal utility comparisons has for long time been believed to impose strict limitations on the economist, which kept this branch of economic theory in the background. Recently, however, there has been reawakening of interest in welfare problems, following assertions that these limitations are less restrictive than were hitherto supposed to be. the present note attempts to analyse the problem in detail.

Although not intended, this article was the kick-off of family-related economic research. In a controversial reply Paul Samuelson "proved" the non-existence of social indifference contours Scitovszky had constructed in this article but appended a short argumentation for the existence of common indifference contours over a family or other small groups where common social norms and ethics on how - or: in who's favour - to spend an additional dollar exist and can be sanctioned. The article itself argues on an Edgeworth-box-like environment for the existence of such social indifference curves, where a social optimum can be identified. Samuelson holds against that with heterogeneous preferences and no common ethic on how to spend additional income, the price ratio of such an economy can not be unique.



**Willis, Robert J.** (1973): "New Approach to the Economic Theory of Fertility Behavior";  
[Abstract; NN]

Willis presents a static model that simultaneously optimises the lifetime fertility decisions, including quantity and quality considerations and day-by-day decisions on resource allocation. In this context he sets up a production-possibility-frontier of all essential long- and short-run production items in control of the family and shows the alteration of this frontier by exogenous and endogenous shocks in shadow and/or market prices of activities resp. commodities.

[Conclusion by Willis; p.53] The restriction placed on the specification of the individual equations of the structural model of fertility behaviour that I have presented and on the structure as a whole represent a drastic simplification of the complex interconnections among fertility, family formation, and family behaviour. Considerations of these restrictions and the manner in which they may be relaxed or changed suggests that the present model is only one particularly simple member of a large class of economic models of individual fertility behaviour which share the common framework of the economic theory of the family. Thus, the static lifetime framework of the present model could be changed to a dynamic life-cycle framework. The assumptions of (1) perfect fertility control could be removed in favour of a theory of imperfect fertility control, (2) exogenous date of marriage and characteristics of marital partners could be replaced by a theory of marriage, and (3) exogenously determined efficiency in household production could be relaxed by applying the theory of investment in human capital to nonmarket efficiency, and so on. Work under-way on a number of such models promises a rich source of alternative hypotheses about fertility behaviour and, simultaneously, about many other aspects of family behaviour.

Recognition that there are potentially many alternative economic models of fertility behaviour must influence any assessment of the empirical importance of economic variables on fertility as expressed in the present model. On the basis of evidence presented in this paper, it appears that the interactions model captures an important empirical regularity in the cross-section relationship between fertility and measures of husband's income and wife's education that has become apparent in the emergence of a U-shaped relationship between fertility and income which has been observed in many advanced countries in the past 25 years and which was an incipient relation at the lower levels of income and education prevailing in earlier periods. This empirical regularity is also consistent with the predictions of the theoretical model of fertility demand developed in this paper and must, therefore, be counted as evidence in its favour. To reiterate the position Ben-Porath has taken in his paper in this Supplement, caution must be exercised in accepting the explanation of fertility behaviour provided by the model, because the mechanism by which the empirical regularity is generated need not correspond exactly or even chiefly to the one posited in the theoretical model. If scientific progress consists in large part of the process of rejecting hypotheses, it follows that progress will be impeded if hypotheses are not proposed. It is in this spirit the hypotheses implied by the theoretical model of this paper are advanced.

## 3.2 New Home Economics: Altruistic dictators?

**Abraham, Martin** (2003): "Die Stabilisierung von Partnerschaften durch bilaterale Investitionen. Das Beispiel der Unternehmensbesitzer; Stabilising Private Relationships with Bilateral Investments. The Example of Firm Owners";

In order to explain the stability of marriages and cohabitations it is often argued that specific investments are crucial determinants of explanation. Especially within the framework of the New Home Economics it is assumed that shared investments, e.g. common children or shared property, reduce the risk of divorce. Although many empirical studies give evidence of this effect, this theory does not explain how these specific investments develop. In particular incomplete information about the partner and the need to allocate investments in an unbalanced manner will reduce one's willingness to tie oneself to a new partner. In order to explain why actors make high specific investments nevertheless, exchange theory is used to model partnerships as a dynamic process. In the beginning, the couple exchange small investments step by step. These accumulate over time to a strong commitment which enable the actors to make high unilateral investments. Within this process the actors can decide on the extent of their commitment to the partnership at any given point of time by controlling the pace of exchange in the relationship. Consequently, the higher a couple's interest in specific investments, the higher the pace of bilateral exchange is. This model is tested by comparing marriages of employed persons to those of firm owners, who are alleged to have an especially high interest in stable partnerships. Based on the data of the Mannheim Divorce Project it can be shown that firm owners and their spouses bring about crucial events in the course of a partnership, such as the first child or common real estate ownership sooner than other couples. Moreover, there is strong empirical evidence that firm owners are less likely to get divorced.

**Alderman, Harold, et al.** (1994): "Strengthening agricultural and natural resource policy through intrahousehold analysis: An introduction";

[Rural areas, Poverty, Natural resources, Economic development, Conservation, Agricultural policy]

In this paper we argue that understanding both the patterns and processes of intrahousehold resource allocation is important for the success of agricultural and natural resource policy. The paper focuses specifically on policies and projects that address income generation of the rural poor, the mitigation 'of season fluctuations in consumption, and sustainable natural resource management (that is, to insure income earned today does not compromise future income streams).

**Alderman, Harold et al.** (1995): "Unitary versus collective models of the household: Is it time to shift the burden of proof?"

[Social policy, Households, Decision making models]

Until recently, most policy analyses implicitly viewed the household as having only one set of preferences. This assumption has been a powerful tool for understanding household behaviour, such as the distribution of tasks and goods. However, a growing body of evidence suggests that this view is an expedience that comes at considerable, and possibly avoidable, cost. It is argued that more effective policy instruments will emerge from analysing the processes by which households balance the diverse interests of their members. Several formulations of the unitary model contain an assumption that inequitable distribution of resources or leisure within a household represents a willing act on the part of all household members. Similar concerns have given impetus to several collective models that focus on the individuality of the household members. These models explicitly address the question of how individual preferences lead to a collective choice. The question is raised as to whether how resources are distributed within various households, as the various theories imply, reflect appreciable differences in the outcomes of policy measures.

**Altonji, Joseph G , et al.** (1997): "Parental altruism and inter vivos transfers: Theory and evidence";  
[Economic theory, Families & family life, Children & youth, Studies, Income distribution, Parents & parenting]

PSID data is used on the extended family to test whether inter vivos transfers from parents to children are motivated by altruism. Specifically, it is tested whether an increase by one dollar in the income of parents actively making transfers to a child coupled with a one-dollar reduction in that child's income results in the parents' increasing their transfer to the child by one dollar. The findings strongly reject the altruism hypothesis. Redistributing one dollar from a recipient child to donor parents leads to less than a 13-cent increase in the parents' transfer to the child.

**Andreoni, James, et al.** (2003): "Charitable giving by married couples";  
[Studies, Donations, Couples, Decision making, Gender, Demographics]

This study examines how charitable giving is influenced by who in the household is primarily responsible for giving decisions. Looking first at single-person households, men and women are found to have significantly different tastes for giving, setting up a potential conflict for married couples. It finds that, with respect to total giving, married households tend to resolve these conflicts largely in favour of the husband's preferences. Bargaining over charitable giving, rather than letting one spouse take charge, is estimated to reduce giving by at least 6%. When the woman is the decisionmaker, she will still make a significantly different allocation of those charity dollars, preferring to give to more charities but to give less to each. Results give new insights into both the demographics of charitable giving and the costliness of household bargaining.

**Anxo, Dominique and Paul Carlin** (2004): "Intra-family time allocation to housework - French evidence";  
[Time allocation, intra-family, time use, home production, bargaining, elasticities]

We analyse new time diary data from France to explore the relationship between economic variables and husbands' share of housework time. Consistent with both bargaining and specialisation models of the family, we find that the greater the husband's share of labour income, the lower his share of housework time; the greater the wife's market hours, the lower his housework time, but the larger his share of housework time. Treating market work as endogenous substantially lowers the size of these estimates, but they remain statistically significant. A parsimonious specification based on the specialisation model generates estimates for housework share wage elasticities. The own wage elasticity of wives' housework is -0.3 and the elasticity of husbands' housework share with respect to wives' wages is +0.25.

**Apps, Patricia and Ray Rees** (1988): "*Taxation and the household*";

[Women, Welfare economics, Utility functions, Taxation, Resource allocation, Production functions , Men, Labour supply, Households, Equilibrium , Economic models, Econometrics]

Previous studies of demand systems and the welfare effects of taxing male and female labour supplies suppress the analysis of household resource allocation by assuming a household utility function. By constructing a simple and fairly general model of household resource allocation, it is shown that this is allowable only if the household allocates income exactly in accordance with the distributional parameters of the usual type of individualistic social welfare function. In the model, households consist of 2 members who have to choose jointly time allocations and consumptions of domestic and market goods. It is substantively assumed that the equilibrium allocation is Pareto efficient. The properties of the equilibrium of this model are used to characterize the effects of tax policy on individual utilities. Results indicate that the precise nature of the distributional terms will depend on the way in which the household allocates its resources.

**Apps, Patricia and Ray Rees** (1996): "Labour supply, household production and intra-family welfare distribution";

[Labour supply; Household production; Intra-family inequality]

The model of the single utility-maximising individual, who allocates total available time between leisure consumption and market labour supply, has been the cornerstone of the theory of the household for over a century. The importance is demonstrated, in conceptual and empirical terms, of incorporating household production in models of labour supply to avoid misleading results concerning the intra-family distribution of income and behaviour responses to economic policy.

**Apps, Patricia and Ray Rees** (1999): "On the taxation of trade within and between households";

[Tax reform, Households, Production functions, Economic models, Studies, Industrialised nations, International]

Tax reform proposals affect individual welfares in ways which strongly depend on the nature of specialisation in household production and the pattern of trade within households. Variation in the degree of specialisation in domestic production across households strongly influences the impacts on individual tax burdens of a given tax reform. The standard models of the economics literature cannot be used to analyse these issues because they ignore the two-person nature of households and the existence of household production and trade. A simple and tractable model is proposed to remedy this and is used to analyse the impacts of the types of tax reform that have been the subject of recent policy debate.

**Apps, Patricia and Ray Rees** (1999): "Individual versus joint taxation in models with household production";

[Utility functions, Economic models, Pareto optimum, Taxation economics, Equilibrium, Welfare economics, Studies, Equilibrium]

In a recent paper, Piggott and Whalley (1996) challenge the conventional wisdom that says that the individual rather than the household should be the unit of taxation and argue instead for joint taxation. The weakness in the Piggott-Whalley reasoning lies in its failure to take account of the main conclusion of the theory of the second-best. The Piggott-Whalley calculations show that a move from an existing tax structure with unequal marginal tax rates for primary and secondary workers, to joint taxation, which equalises these tax rates, can increase welfare. It must then be possible to achieve a further welfare improvement by departing in some direction from the joint taxation structure reached, as long as it is not a second-best optimum. A formal analysis of these points is provided.

**Aronsson, Thomas, et al.** (2001): "Estimating Intrahousehold Allocation in a Collective Model with Household Production";

[Time-use, household production, collective model]

The purpose of this paper is to estimate the intra-family distribution of income and the individual demand for leisure and household production from Swedish cross-sectional household data. As a basis for the analysis, we use a collective model where each individual is characterised by his or her own utility function and divides total time between leisure, household production and market work. For the purpose of comparison, we also estimate a version that is consistent with a more traditional model of labour supply, the unitary model.

**Baland, Jean Marie and James A Robinson** (2002): "Rotten Parents";

[Fertility; Population; Welfare]

We study the implications of the trade-off between child quality and child quantity for the efficiency of the rate of population growth. We show that if quantity and quality are inversely related then, even in the case of full altruism within the family, population growth is inefficiently high, if the family does not have, or does not choose to use, compensating instruments (for example, bequests or savings are at a corner). In non-altruistic models this trade-off certainly generates a population problem. We therefore prove that the repugnant conclusion is not only repugnant, it may be inefficient. Moreover, we cannot expect intra-family contracting to resolve the inefficiency since it involves contracts which are not credible.

**Beblo, Miriam** (2002): "Bargaining over Time Allocation";

[Time allocation, household bargaining, household labour supply, panel-econometric analysis]

[By P. Apps, REL, 2002] This book provides an addition to the growing literature on the intrahousehold allocation of resources. It presents modelling approaches and empirical findings from the author's dissertation thesis on the subject. The focus of the research is on the allocation of time by family members to three main activities: market labour supply, work at home and pure leisure. The study confirms the well known finding from time use survey data that women tend to work longer than men do, in terms of the total hours they allocate to market and domestic work. Women therefore have less pure leisure. The aim of the study is to shed light on the dynamic process that underlies the observed leisure differential between women and men, together with the asymmetric gender division of market and domestic work within the household.

The early chapters of the book provide a somewhat specialised survey of the literature on modelling household decision taking and the intra-household allocation of resources. Chapter 2 begins by setting out a household utility function model. Following Gronau (1977), the author differentiates between market and domestic goods. These are then assumed to be perfect substitutes that enter the utility function as a single composite consumption good, together with female and male leisures. It is important to note that this is not the standard household utility function model estimated in the microeconomic literature on family labour supply. In that literature, family utility function models are estimated on household survey data that provide information on market consumption at the level of the household and on the labour supply of each adult. Because information on time allocated to domestic work and pure leisure is missing, there can be no assigned goods in the utility function. If all family members are assumed to face the same prices, and the usual restrictions are imposed, the results yield estimates of the parameters of aggregate household demands for market consumption and the non-market times of family members. Although it is common practice to refer to the latter as "leisures," in fact they represent time allocations to domestic activity for own consumption and that of other family members.

In contrast, the leisures in the Gronau model are pure leisures. They are therefore assigned goods for which family members face different prices. Gronau was very much aware of the need for time use data for the estimation of his model and, as more recent work shows, with access to time use data the empirical specification of a family model differs from that of the standard model. Given this, the critique of the household utility function approach in the discussion of "unitary" models in chaps. 2 and 3 would seem to be misplaced. A central thesis of the book is that a dynamic bargaining framework, that allows for sequential non-cooperation between partners, offers the most empirically relevant and, from a policy perspective, the most useful approach for analysing family decision concerning labour supply, household production and leisure. Chapter 4 presents a dynamic bargaining model of time use and empirical results based on time use data from the German Socio-economic Panel (GSOEP). Chapter 5 investigates a "dominance argument" for time allocation decisions. Chapter 6 reports the results of an empirical analysis of the gender division of time within the household, again based on data from the GSOEP. The main findings from the latter are broadly consistent with the evidence on time use for other countries: women specialise strongly in domestic work and have less leisure. A fourth piece of empirical work is reported in chap. 6. This last study is based on a model in which only leisure is a private good. Market and domestic goods are treated as public goods. An important contribution of the book is to highlight the significance of time use data in empirical work on family labour supply. Without such data, we have no information on the allocation of time between domestic work and pure leisure. And if data on market consumption is available only at the household level, or if information on domestically produced substitutes for assigned market goods is missing, then empirical work will continue to be very limited. The results will not be able to tell us anything about the intrahousehold distribution of full income or consumption, or about the preferences of family members. If future empirical work is to be policy relevant, models that fully integrate the analysis of domestic production and market labour supply, and that can also capture explicitly the intra-family effects of government policies supporting gender differences in outside opportunities, will be required. It will also be essential to specify models that can take account of the diversity in the market-domestic work choices of parents, across households with the same wage rates, non-labour incomes and demographic characteristics, so evident in the data.

**Becker, Gary S.** (1993): "Ökonomische Erklärung menschlichen Verhaltens";

Since his pioneering application of economic analysis to racial discrimination, Gary S. Becker has shown that an economic approach can provide a unified framework for understanding all human behaviour. In a highly readable selection of essays Becker applies this approach to various aspects of human activity, including social interactions; crime and punishment; marriage, fertility, and the family; and "irrational" behaviour. Becker's highly regarded work in economics is most notable in the imaginative application of 'the economic approach' to a surprising breadth of human activity. Becker's essays over the years have inevitably inspired a surge of research activity in testimony to the richness of his insights into human activities lying 'outside' the traditionally conceived economic markets. Perhaps no economist in our time has contributed more to expanding the area of interest to economists than Becker, and a number of these thought-provoking essays are collected in this book.

**Becker, Gary S.** (1993): "A Treatise on the Family";

In this book I develop an economic or rational choice approach to the family. The title does not refer to economic aspects of the family, however, because most noneconomists and many economists would interpret the qualifier "economic" to indicate that the discussion is confined to the material aspects of family life, to incomes and spending patterns. My intent is more ambitious: to analyse marriage, births, divorce, division of labour in households, prestige, and other nonmaterial behaviour with the tools and framework developed for material behaviour. That is to say, this book contains an economic approach to the family, not in the sense of an emphasis on the material aspects of family life, but in the sense of a choice-theoretic framework for analysing many aspects of family life.

**Behrman, Jere R.** (1997): "Intrahousehold Distribution and the Family";

The chapter by Jere Behrman focuses on models that describe the allocation of resources among members of households and the empirical evidence on intrahousehold distribution. The chapter begins with descriptions of specific static models of intrahousehold distribution that give rise to a number of implications concerning the role of families in altering the distribution of incomes and wealth across generations. Behrman next discusses the available evidence in terms of how well the studies cope with such common and important empirical problems as the existence of unmeasured endowments of individuals that play a prominent role in models of intrahousehold distribution, the absence of direct information on individual-specific resource allocations within the household, and imperfect measurement of outcomes. Evidence is reviewed on such issues as whether the allocation of resources across children in a family is sensitive to price differentials, whether parents reinforce or compensate for differences in endowments of ability or health across children, and whether households are unified and/or allocate resources efficiently. The empirical studies reviewed include those examining behaviour in both high- and low-income countries, and many of the studies employ novel family-based sampling frames including samples of sisters and identical and nonidentical twins. These studies examine differences in mortality across male and female children, gender differentials in the allocation of time, the relationship between work activities, health endowments, and intrahousehold food distribution, and the role of endowment differentials in allocating schooling within the family.

**Bergstrom, Theodore C.** (1997): "A Survey of Theories of the Family";

Theodore Bergstrom's opening chapter traverses the burgeoning theoretical literature concerned with understanding the rationale for, the formation, structure and dissolution of, and resource allocations within families and households. The chapter shows how the building blocks of modern microeconomics, preferences, and technology can be used to productively study families, employing modern concepts and tools such as public goods, transferable utility, cooperative and noncooperative, and evolutionary game theory, and programming methods. Bergstrom shows how these concepts contribute to an understanding of whether the family can be considered as a single unified decision maker, how resources are allocated among members of a household, the matching of individuals in the marriage market (the assignment problem), how the marriage market influences within-household decisions, the age of marriage of men and women, nonmonogamous household structures, and the strength of the intergenerational linkages among family members. Among the important concepts discussed in this chapter are those that arise because of the close interactions of family members. These include the concepts of altruism, envy, paternalism, and interdependence which are given rigorous definitions and whose implications for behaviour and for welfare analysis are elucidated.



**Biswal, Urvashi Dhawan** (1999): "Testing the family "Common Preference" model for immigrant and non-immigrant women's labour supply";

[Studies, Labour market, Women, Economic models, Aliens, Statistical analysis, Immigrant women, Child tax benefit, Family finance]

The "income-pooling" hypothesis implicit in the "common preference" model of the family for immigrant and non-immigrant married women in Canada is tested. Two cross-sections of the Family Expenditure Survey, 1986 and 1992, are employed. The hypothesis is tested against the "bargaining" model which belongs to an alternate class of family models known as "collective" models. Consistent with previous findings, it is found that the pooling hypothesis is rejected for non-immigrant women. In addition, it is found that the pooling hypothesis is also rejected for immigrant women. The rejection of the pooling hypothesis implies that the transfer income received by a wife and the transfer income received by a husband have different effects on labour supply. This has important policy implications as to the effect on women's labour supply of transfers received by her or her spouse under family policies such as the Child Tax Benefit in Canada.

**Blundell, Richard, et al.** (2002): "Collective labour supply: Heterogeneity and non-participation";

[Labour supply, collective model, participation, sharing rule]

In this paper we extend the "collective" model of labour supply developed by Chiappori (1988) to allow for discrete choices, censoring and nonparticipation in employment. We derive the collective restrictions on labour supply functions that we contrast with restrictions implied by the usual "unitary" framework. We apply our results to the estimation of a collective labour supply model for married couples without children using UK data from 1979 to 1993. Taking into account unobserved heterogeneity, we use the popular log-linear labour supply framework. The implications of the unitary framework are rejected while those of the collective approach are not. The estimates of the sharing rule show that wages have a strong influence on bargaining power within couples.

**Blundell, Richard and Thomas MaCurdy** (1999): "*Labor Supply: A Review of Alternative Models*";

This chapter surveys existing approaches to modelling labour supply and identifies important gaps in the literature that could be addressed in future research. The discussion begins with a look at recent policy reforms and labour market facts that motivate the study of labour supply. The analysis then presents a unifying framework that allows alternative empirical formulations of the labour supply model to be compared and their resulting elasticities to be interpreted. This is followed by critical reviews of alternative approaches to labour-supply modelling. The first review assesses the difference-in-differences approach and its relationship to natural experiments. The second analyses estimation with non-linear budget constraints and welfare-program participation. The third appraises developments of family labour-supply models including both the standard unitary and collective labour-supply formulations. The fourth briefly explores dynamic extensions of the labour supply model, characterising how participation decisions, learning-by-doing, human capital accumulation and habit formation affect the analysis of the lifecycle model. At the end of each of the four broad reviews, we summarise a selection of the recent empirical findings. The concluding section asks whether the developments reviewed in this chapter place us in a better position to answer the policy-reform questions and to interpret the trends in participation and hours with which we began this review.

**Bolin, Kristian, et al.** (2002): "The family as the health producer--When spouses act strategically";

[Health; Human capital; Strategic spouses; Grossman model]

The Grossman model has been extended recently in order to take account of the fact that most people lead their lives in a family—using frameworks in which family members, respectively, (a) have common preferences and (b) are Nash-bargainers. These models, however, do not consider individual incentives for behaving strategically. In the model presented in this paper, spouses interact strategically both in the production of own health and in the production of health of other family members. We analyse, inter alia, the impact on the distribution of health of changes in family policies, such as child allowance and custody rules.

**Bourguignon, Francois** (1999): "The cost of children: may the collective approach to household behavior help?"

[Consumption behaviour, intra-household allocation, cost of children]

The collective approach to household consumption behaviour tries to infer from variables supposed to affect the general bargaining position of household members information on the allocation of consumptions goods and tasks among them. This paper investigates the extension of previous work to the case where children may be considered as a public consumption good by the two adult members of a household. The main question being asked is whether it is possible to retrieve from the aggregate consumption behaviour of the household and the relative earnings of the parents information on the allocation of goods between them and children. This alternative approach to the estimation of the 'cost of children' is contrasted with the conventional approach based on a 'unitary' representation of and demographic separability assumptions on household consumption behaviour.

**Brett, Craig** (1998): "Tax reform and collective family decision-making";

[Studies, Economic theory, Tax reform, Economic models, Pareto optimum, Households, Decision making]

Traditional analysis of tax reforms treats market behaviour as arising out of individual utility maximisation. Behaviour is modelled as the Pareto-efficient outcome of a family decision process. Conditions for the existence of a feasible, Pareto-improving tax change are presented and contrasted with those that obtain in the individualistic case. The consequences of treating households as a single individual are also discussed.

**Browning, M. ea** (1994): "Income and outcomes: A structural model of intrahousehold allocation";

[Studies, Personal income, Mathematical models, Income distribution, Economic theory]

There is evidence from several sources that one cannot treat many-person households as a single decision maker. If this is the case, then factors such as the relative incomes of the household members may affect the final allocation decisions made by the household. A method of identifying how incomes affect outcomes, given conventional family expenditure data, is developed. The basic assumption the analysis makes is that household decision processes lead to efficient outcomes. The method is applied to a sample of Canadian couples with no children. The analysis finds that the final allocations of expenditures on each partner depend significantly on their relative incomes and ages and on the level of lifetime wealth. These effects are highly significant in a statistical sense. They also suggest that the influence of differential incomes and wealth on intrahousehold allocation can be fairly substantial.

**Cardia, Emanuela and Philippe Michel** (2004): "Altruism, intergenerational transfers of time and bequests";

[Studies, Estate planning, Bequests, Economic models, Property transfers]

This paper uses a standard two-period overlapping generation model to examine the behaviour of an economy where both intergenerational transfers of time and bequests are available. While bequests have been examined extensively, time transfers have received little or no attention in the literature. Assuming a log-linear utility function and a Cobb-Douglas production function, we derive an explicit solution for the dynamics and show that altruistic intergenerational time transfers can take place in presence of a binding non-negativity constraint on bequests. We also show that with either type of transfers capital is an increasing function of the intergenerational degree of altruism. However while with time transfers the labour supply of the young increases with the degree of altruism, with bequests it may decrease. [PUBLICATION ABSTRACT]



**Chang, Chin Oh, et al.** (2003): "Economic and Social Status in Household Decision-Making: Evidence Relating to Extended Family Mobility";

[DECISION making; HOUSEHOLDS; RESIDENTIAL mobility]

Models of the allocation of household resources use as a decision rule either the maximisation of a household utility function or the solution to a Nash-bargaining game. The literature on residential mobility has exclusively used the former to analyse the household's decision to change location. This is despite the strong empirical evidence that allocations in other areas are more consistent with the bargaining model. In this paper micro-data from Taipei, Taiwan, are used to determine which approach is most appropriate for studying housing mobility decisions. The mobility decisions of nuclear and different types of extended family household are compared to test whether the social and economic roles of different generations affect the household decision process, as is consistent with the bargaining approach. Thus, household mobility is analysed with a richer description of household structure than is found in the current literature, which implicitly treats households as either a nuclear family or some smaller unit. The results support the bargaining model of household decision-making. Conditional probabilities differ between nuclear and extended families, when a member of the eldest generation in an extended household is the household head, and when a member of the eldest generation contributes to household earnings. Of these, it is found that economic status is paramount to social status.

**Chiappori, Pierre-Andre** (1988): "*Rational household labor supply*";

[Microeconomy, labour supply, household behaviour, nonparametric analysis]

Traditionally, household behaviour is derived from the maximisation of a unique utility function. In this paper, we propose an alternative approach, in which the household is modelled as a two-member collectivity taking Pareto-efficient decisions. The consequences of this assumption are analysed in a three-good model, in which only total consumption and each member's labour supply are observable. If the agents are assumed egoistic (i.e., they are only concerned with their own leisure and consumption), it is possible to derive falsifiable conditions upon household labour supplies from both a parametric and nonparametric viewpoint. If, alternatively, agents are altruistic, restrictions obtain in the nonparametric context; useful interpretation stems from the comparison with the characterisation of aggregate demand for a private-good economy.

**Chiuri, M C and P J Simmons** (1997): "Universal decentralisation: A demand system for collective and unitary models with household public goods";

[Demand, Decentralisation, Consumption, Households, Studies, Mathematical analysis, Economic models, Welfare economics, Externality, Demand analysis, Labour supply, Economic theory]

Demand systems that exhibit universal decentralisation are defined. It is argued that this concept is important in household consumption and labour supply models. It is shown that the concept nests many approaches to the analysis of individual and family behaviour. It is found that conditions for demand with universal decentralisation are the result of a household welfare maximisation procedure. The link between universal decentralisation and quasi separability is explored. There are connections between universal decentralisation and a nonlinear idea of the rank of a demand system.

**Chu, C Y Cyrus** (1990): "An Existence Theorem on the Stationary State of Income Distribution and Population Growth";

[Utility functions, Socioeconomic factors, Random variables, Population growth, Income distribution, Human capital, Households, Economic theory, Economic models, Births, Families & family life]

By applying a utility-maximising process, individuals derive their optimal fertility and bequest decisions - both as functions of their initial socioeconomic backgrounds. The combination of these 2 decisions forms a multitype Galton-Watson process. Under weak assumptions, it is demonstrated that the economy will converge to a unique stationary state that implies both a constant population growth rate and a time-invariant income distribution. The Becker-Willis static micro-level fertility demand model is extended to a dynamic macro-level population growth model. Alternatively, the present model can be viewed as a generalisation of Laitner's stochastic income theory where no differential fertility is allowed.

**De Paola, Maria and Vincenzo Scoppa** (2003): "Family ties and training provision in an insider-outsider framework";

[Family ties; Training; Insider–outsider framework; Contract enforceability; Hiring policies]

On-the-job training of new employees is often realised through the help of experienced workers. Considering the lack of verifiability of the human capital transmission process and the loss of insiders' bargaining power deriving from it, we examine some firms' hiring policies, based on family relationships, aimed to elicit the incumbent workforce's cooperation in training. We proceed by introducing the assumption that individuals are moved by intra-family altruism and maximise a family utility function rather than an individual one. The implications of this assumption in an insider–outsider framework are explored: the family ties between insiders and outsiders can modify the insiders' convenience in following a non-cooperative behaviour aimed at obtaining a higher wage. The insiders might try to influence firms' hiring decisions by offering to cooperate in the training process of outsiders belonging to their own family. This could explain the evidence showing that many firms in depressed labour markets hire members of the same family.

**Del Boca, Daniela** (2003): "Mothers, fathers and children after divorce: The role of institutions";

[Divorce, intra-household allocation, children welfare]

Abstract. In recent years the increase in the divorce rate in many advanced countries and the predominance of female-headed families among the poor has generated much interest in the relationship between divorce and the welfare of mothers and children. In this paper I will review a small body of economic literature which has been recently developed in order to analyse the economic consequence of divorce on the welfare of fathers, mothers and children under alternative behavioural assumptions. Important economic and econometric issues arise from an analysis of welfare in non intact households as compared with intact households. In particular the focus is on the role that institutions play in post-divorce arrangements and important implications concerning policies for child support, custody, and visitation.

**Dobbelsteen, Simone and Peter Kooreman** (1997): "Financial management, bargaining and efficiency within the household; An empirical analysis";

[Economic models, Economic theory, Studies, Bargaining, Efficiency, Households, Personal finance, Game theory, Decision making]

Data are analysed from the British Household Panel Survey on households' financial management and financial decision-making. Direct subjective information was collected by asking questions like: "Who has the final say in big financial decisions?". All questions were answered separately by both partners. Two competing models that explain how finances are organised are considered. The first model is based on a household production approach, in which behaviour is determined by an efficient allocation of both partners' time to market work, financial management, and leisure. In the second model which is game-theoretic in nature, financial management is a reflection of bargaining power. The two models have different implications for the effect of explanatory variables, in particular wages, on the dependent variables. Empirical results indicate that financial management is primarily determined by bargaining considerations.

**Doss, Cheryl R** (1996): "Testing among models of intrahousehold resource allocation";

[Many countries, Resource allocation, Households, Microeconomics, Economic models, Research, Test methods, Economic theory]

In many microeconomic studies, the household is treated as an individual for analytical purposes. Recently, however, a number of economists have recognised that households are sites of conflict as well as cooperation and have begun to use new classes of models to explain how resources are allocated among household members. A paper examines the assumptions, predictions, and empirical implications of different intrahousehold models. In particular, it analyses empirical tests that distinguish among competing models. By clarifying the similarities and differences among alternative models, the paper also clarifies what has actually been demonstrated (and what has not been demonstrated) by previous empirical studies, thus indicating specific topics in need of further research.

**Elder, Harold W and Patricia M Rudolph** (2003): "Who makes the financial decisions in the households of older Americans?"

[Household decision making, Financial decision making, HRS, Ordered probit]

Household decision making is at the heart of economic activity; yet very little is known about the actual process. Traditionally, economic modelling of households has treated the decision making process as equivalent to having one person make the decisions. Dissatisfaction with this approach has led to the development of models that imply that the decisions are the product of a bargaining process within the household. We analyse data from the Health and Retirement Survey (HRS) to examine financial decision making within the households of older Americans. Our results are generally consistent with the bargaining model of household behaviour.

**Fafchamps, Marcel and Agnes R Quisumbing** (2003): "Social roles, human capital, and the intrahousehold division of labor: Evidence from Pakistan";

[Studies, Human capital, Social life & customs, Households, Economic theory, Economic models, Gender, Families & family life]

Using detailed data from rural Pakistan, this paper investigates whether human capital, learning-by-doing, gender, and family status affect the division of labour within households. Results suggest the presence of returns to individual specialisation in all farm, non-farm, and home based activities. The intrahousehold division of labour is influenced by comparative advantage based on human capital and by long-lasting returns to learning-by-doing, but evidence is also found of a separate effect of gender and family status. Households seem to operate as hierarchies with sexually segregated spheres of activity. The head of household and his or her spouse provide most of the labour within their respective spheres of influences; other members work less. When present in the household, daughters-in-law work systematically harder than daughters of comparable age, height, and education. Other findings of interest are that there are increasing returns to scale in most household chores, that larger households work more off farm, and that better educated individuals enjoy more leisure.

**Fan, Chengze Simon** (2001): "A model of intergenerational transfers";

[Keywords and Phrases: Intergenerational transfer, Markov perfect equilibrium, Life-cycle hypothesis]

Extending some existing literature, this paper formalises the idea that intergenerational transfers occur because people care about the 'characteristics' (i.e quantity and quality) of their offspring, rather than their children's welfare per se or consumption. The model analyses this transfer motive in an infinite Markovian game framework, and it proves the existence of a stationary Markov Perfect equilibrium. Further, the analysis shows that under certain conditions, the proposed transfer motive will diminish, as the average income of an economy is sufficiently high. Thus, it suggests that as incomes continue to rise beyond a certain level, the (extended) life-cycle hypothesis will likely be a better and better approximation for explaining most people's saving behaviour. This result also provides an explanation for the decline of the saving rates in the U.S. and other developed countries.

**Findlay, Jeanette and Robert E. Wright** (1996): "Gender, poverty and the intra-household distribution of resources";

[Gender-roles; Poverty-; Wealth-distribution; Household-income; Household-budgets; Women-]

Most empirical studies of poverty assume an equal sharing of resources between all household members. There is a growing body of research indicating that this assumption is not realistic. This paper explores how the unequal sharing of resources could potentially affect the measurement of poverty. Simulations based on micro-data from two countries, Italy and the United States, are carried out under the assumption that women 'lose' and men and children 'gain' because of unequal sharing in the household. The authors' findings suggest that, if there is significant intrahousehold inequality of this type as some writers have suggested, then conventional methods of poverty measurement will likely to lead to a serious underestimate (overestimate) of the incidence and intensity of female (male) poverty.

**Folbre, Nancy** (1994): "Children as Public Goods";

[Studies, Social issues, Self interest, Families & family life, Economic theory, Children & youth, Tax deductions, Public finance, Parents & parenting, Capital]

Much of the economic literature on families is couched within a neoclassical framework based on individual optimisation. This framework treats familial altruism, like other tastes and preferences, as exogenously given and focuses on household responses to changes in prices and incomes. Altruism is considered rare outside the family, where self-interest undermines the potential for collective action. An alternative approach, influenced by feminist theory, places more emphasis on self-interest within the home. Considerable evidence suggests that parents in the now-developed countries once enjoyed important economic benefits from child-rearing, not only because children began to work at an early age, but also because parental control over assets such as family farms gave them leverage over adult children. Similar factors contribute to high fertility in many developing countries today. Numerous aspects of the issue of children as public goods are addressed in detail.

**Fortin, Bernard and Guy Lacroix** (1997): "A test of the unitary and collective models of household labour supply";

[Labour supply, Households, Economic models, Demographics, Family income, Statistical analysis, Studies]

The unitary and the collective household labour supply models within a structural framework are tested. A nonlinear unrestricted household labour supply system is postulated and the set of parametric restrictions imposed by each model is derived. The results generally reject the income pooling restrictions embodied in the unitary model. Also, the symmetry of cross-wage effects is rejected. However, the collective model is not rejected for groups with no pre-school children. The lack of precision of the sharing rule and individual preferences parameters indicates avenues for further empirical exploration.

**Glaeser, Edward L** (1992): "The Cinderella Paradox Resolved";

[Social research, Parents & parenting, Home economics, Families & family life]

In the traditional economics of the family, convex indifference curves suggest that parents should distribute income and training equally over children. The counterexample of this, the Cinderella Paradox, is examined.

**Gronau, Reuben** (1986): "Home Production - A Survey";

[Home production, joint utility function]

Neoclassical theory tends to draw a clear distinction between the theory of production and the theory of consumption. According to the traditional approach, production is undertaken by profit-seeking firms in the market, while consumption is in the domain of utility-maximising households. The firms sell final output (goods and services) to households in exchange for inputs (labour and capital services). This distinction became somewhat blurred in the mid-1960s. More and more economists now question the assumptions that the sole objective of firms is to maximise profits and, more important, that production decisions are confined to the market sector. The lines distinguishing the market from the home sector have always been vague in less developed countries. The "new" theory of consumption argues that even in developed countries, production at home is no less important than market production. This approach regards goods and services merely as inputs in the production process that generate utility-bearing outputs (e.g. commodities, activities, characteristics). To understand the exchange between households and firms one has to understand the factors affecting this production process.

**Gronau, Reuben** (1991): "The Intrafamily Allocation of Goods--How to Separate the Adult from the Child";

[Resource allocation, Regression analysis, Propensity to consume, Family, Economic theory, Economic models, Consumption function, Children, Adults, Research, Families & family life, Economics, Economic statistics, Consumer behaviour]

The assumption of separability of parents' and children's consumption is essential for the estimation of the intrafamily allocation of resources. Although the importance of the separability assumption has been recognised before, its empirical implications have not been fully explored. Applying a variation of the Rothbarth (1943) model to the US 1972 Consumption Expenditure Survey, it is found that white married families tend to allocate 3/4 of their consumption to parents and 1/4 to children. Black families do not differ much in their distribution rule from white families; unmarried mothers spend a higher fraction of their consumption on their children. Tests for robustness, for selectivity bias, and for the separability assumption itself support the findings.

**Gronau, Reuben** (1997): "The theory of home production: The past ten years";

[Studies, Labour economics, Time management, Work at home, Theory]

The theory of home production and the allocation of time are focused on. The greatest contribution of the theory of home production in the past decade was in its service to the better understanding of consumption behaviour and changes in labour supply over the business cycle.

**Grossbard-Shechtman, Shoshana** (2002): "A consumer theory with competitive markets for work in marriage";

[Consumer theory; Marriage; Competitive markets; Intra-household allocation]

The theory presented here aims at explaining individual consumer behaviour inside marriage and prior to marriage. It is a New Home Economics (NHE) model in the sense that it assumes the existence of household production. It is an intra-household bargaining model in the sense that it assumes that husbands and wives typically have different economic interests with respect to marriage, and they try to negotiate arrangements that suit them best. The more resources they have, the more they may obtain results that favour them rather than their spouse. This theory throws light on gender differences in demand for commercial goods that have home-produced substitutes. The theory can also explain differences in demand for different products. Predictions include that of a sex ratio effect on consumption. It is also predicted that there will be compensating differentials in marriage.

**Grossbard-Shechtman, Shoshana** (2002): "The New Home Economics At Colombia And Chicago";

[Household economics, history of economic thought, gender, labour supply]

When Jacob Mincer and Gary Becker started the New Home Economics (NHE) at Columbia University in the early 1960s, they expanded on the field of family and consumption economics that Hazel Kirk and Margaret Reid began in the early 1920s. This paper studies forty years of household economics, the decisions that household members make regarding any allocation of resources. These decisions may regard consumption, labour supply, transportation, fertility, or health. A review of the history of the NHE shows that Jacob Mincer's original contribution tends to be underestimated. This paper also argues that the growth of the NHE benefited from the concentration of talent at Columbia, organisational support, the diversity of a student body that included many talented women, the ideological commitments that students, many of them married, had for the study of home production, a departmental policy de-emphasising gender-related politics, and relatively high levels of civility.

**Grossman, Michael** (2003): "Household Production and Health";

[New Home Economics, Health Economics]

This paper highlights the influence of the new home economics in general and Jacob Mincer's work in particular on the field of health economics. I begin by considering the value of time as a determinant of adult health and medical care utilisation. I then turn to a similar treatment in the case of children's health and medical care utilisation. I conclude with alternative explanations of the positive relationship between years of formal schooling completed and health, a topic that deals with complementary relationships between the two most important components of the stock of human capital. [PUBLICATION ABSTRACT]

**Haller, Hans** (2000): "Household decisions and equilibrium efficiency";

[Equilibrium, Efficiency, Households, Economic models, Economic theory, Studies]

A general equilibrium model is introduced where a household may consist of several members, each with individual preferences or resources. When households obey collective rationality, certain intra-household externalities can be fully internalised by their respective households so that competitive exchange among households is efficient. As a rule, however, such intra-household externalities are not fully internalised by individual household members acting in their personal interest so that competitive exchange among such individuals is only efficient in exceptional cases.

**Heath, Julia A** (1990): "Non-Employed Women, Marriage and the Sisyphus Syndrome";

[Women, Wage rates, Statistical analysis, Opportunity costs, Marriage, Human capital, Family, Economics, Economic theory, Divorce, Homemakers, Home economics, Families & family life]

Traditional economic models of the family have consistently assigned an opportunity cost to a nonemployed wife's time spent in home activities. This treatment of assigning a market value to a nonmarket activity distorts the processes by which wives' nonparticipation in the labour force leads to greater marital stability. Marriage for a nonemployed woman is like the work of Sisyphus: routine, repetitive, and unvalued by the economic standards of society. On the other hand, neoclassical theory asserts that marital stability is increased if the wife works exclusively in the nonmarket sector through the accumulation of marriage-specific capital, causing the payoff to remaining married to be high. In fact, the observed relationship between marital stability and the wife's lack of labour force participation occurs because her divorce payoff is low. The Sisyphus syndrome has profound policy implications. The family structure is significantly affected by labour force participation and human capital accumulation by women.

**Hernandez, Sigfredo A** (1990): "The Division of Housework: Choice and Exchange";

[Wives, Theory, Regression analysis, Implications, Hypotheses, Husbands, Housework, Comparative studies, Choices, Benefit cost analysis]

A recent study attempts to explain one aspect of the household structure: the division of housework. A review of past research reveals 3 major explanations for the division of housework: 1. the new home economics, 2. resource theory, and 3. tradition. A social exchange theory of the division of housework proposes that consumers, in their home production roles, determine the amount of effort that they will spend in housework based on the profit that they anticipate from housework activities. The results of the data analysis indicate that husbands and wives do take into account certain costs and rewards when making individual choices on the amount of effort to be spent in such activities. Indirect costs was the best predictor of the amount of effort spent in housework for both husbands and wives.

**Iversen, Vegard** (2003): "Intra-Household Inequality: A Challenge for the Capability Approach?"

[Women's studies, Social research, Theory, Inequality, Feminism, Gender, Developing countries, LDCs, Households]

In this paper, the author examines the capability approach and how it applies in the context of individuals and families living together on unequal terms. The interpretations of agency, freedom, and choice in Sen's framework are analysed from a feminist perspective, and the author suggests that these important concepts invite special attention in the presence of domestic power imbalances. Problems with the interpretations embedded in the capability approach are pinpointed and adjustments proposed. Drawing on the vast literature on household behaviour in developing countries, the author argues that capabilities have a distinctly interdependent dimension. While the discussion of agency in the capability approach has been either normative or policy-oriented, exercises that seek to evaluate individual well-being should pay more attention to the existence of alternative types of power within the realm of the household.

[PUBLICATION ABSTRACT]



**Kaplow, Louis** (1996): "Optimal distribution and the family";

[Welfare economics, Studies, Social security taxes, Income taxes, Income distribution, Family income, Economic models]

Income tax burdens, welfare payments, and social security benefits depend on the composition of family units. Substantial controversy exists over the appropriate forms of adjustment, as reflected by the wide variation in methods among programs, across jurisdictions, and over time. In contrast to approaches based on ability to pay or equivalence scales, a utilitarian welfare function is used to derive the equitable distribution of income for different family configurations. The analysis considers how allocations should depend on family sharing arrangements, economies of scale, altruism among family members, and differences in utility functions among family members.

**Kapteyn, Arie and Peter Kooreman** (1992): "Household Labor Supply: What Kind of Data Can Tell Us How Many Decision Makers There Are?"

[Studies, Pareto optimum, Labour supply, Households, Game theory, Economic models, Decision making, Consumption function]

There appears to be an increasing interest in models of household labour supply based on game theoretic notions. The neoclassical model and the cooperative game theoretic model are empirically indistinguishable as long as one only uses data on household nonlabour income and consumption and on wages and hours worked by family members. In terms of the neoclassical model, a game theoretic approach provides an argument for the occurrence of prices in the household utility function. However, this argument does not distinguish it empirically from any other consideration that would imply price-dependent preferences. At the present stage, Pareto optimality is about the only tenable assumption of household bargaining models. At the same time, this makes these models empirically indistinguishable from neoclassical models, possibly with price-dependent preferences. For a truly powerful test of the game theoretic model, one needs additional information about the players' preferences.

**Katz, Elizabeth G** (1995): "Gender and trade within the household: Observations from rural Guatemala";

[Women, Transfers, Studies, Resource allocation, Men, Labour force, LDCs, Family income, Economic models, Agricultural economics, Sexes, Rural areas, Personal finance, Economics, Developing countries]

A household model proposed by Carter and Katz (1992) assumes that resource exchanges and the division of expenditure responsibilities among household members are directly observable and important to their individual and collective responses to new opportunities and constraints. It is possible to observe the complex processes that characterise the domestic economy by examining several examples of intra-household resource transfers and expenditure flows among a sample of rural households in the Central Highlands of Guatemala. It is found that women transfer significant labour time to a new male income-generating activity, with the greatest source of variation in the value of this intra-household resource transfer being the availability of older daughters to perform the domestic labour that is normally the responsibility of the female head. Nonfood expenditures are analysed in light of the relative responsibilities of men and women in decision making, finance, and purchase. It is found that increased male agricultural income is largely spent on male goods, affecting women's ability to purchase food and domestic technology.

**Kawaguchi, Akira** (1994): "Testing neoclassical and non-neoclassical models of household labour supply";

[Studies, Regression analysis, Labour supply, Family income, Economic theory, Economic models, Labour force]

Four models of household labour supply are discussed: 1. the neoclassical model, 2. the wife as a secondary earner model, 3. in the intra-household trade model, and 4. the Nash bargaining model. The first 3 models are tested using data from the 1986 Australian Income Distribution Survey. It is found that none of these 3 models satisfied their necessary conditions. The results imply that past studies of labour supply may have imposed too restrictive assumptions. The true model is probably more complicated than what has usually been assumed, or many different types of household decisions making may exist in a society.

**Klawon, Emily and Jill Tiefenthaler** (2001): "Bargaining over family size: The determinants of fertility in Brazil";

[Fertility, household bargaining, Unitary model.]

Understanding how households make fertility decisions is important to implementing effective policy to slow population growth. Most empirical studies of this decision are based on household models in which men and women are assumed to act as if they have the same preferences for the number of children. However, if men and women have different preferences regarding fertility and are more likely to assert their own preferences as their bargaining power in the household increases, policies to lower fertility rates may be more effectively targeted toward one spouse or the other. In this paper, we test the relevance of the single preferences model by investigating whether men and women's nonwage incomes have the same effects on the number of children in the household. We find that while increases in both the man and woman's nonwage income lower the number of children in the household, an equivalent increase in the woman's income has a significantly stronger effect than the man's. In addition, we find that increases in women's nonwage transfer income have the strongest effects on the fertility decisions of women with low levels of education. The most important policy implication of our results is that policies aimed at increasing the incomes of the least-educated women will be the most effective in lowering fertility rates. [PUBLICATION ABSTRACT]

**Kooreman, Peter and Sophia Wunderink** (1997): "*Economics of Household Behaviour*";

This new text focuses upon the growing interest in the economic behaviour of households and families and examines the microeconomic behaviour of household units and their place in the macroeconomic environment. By combining a number of aspects of household behaviour the authors have produced a stimulating and innovative international text in this topical area.

**Kotlikoff, Laurence J, et al.** (1990): "A Strategic Altruism Model in Which Ricardian Equivalence Does Not Hold";

[Wealth, Transfers, Mathematical analysis, Economic theory, Economic models, Children, Research, Families & family life, Economics]

Barro (1974) showed how love of children (intergenerational altruism) can economically link current and future generations and thereby neutralise intergenerational redistribution by the government (Ricardian equivalence). While some critics have pointed out reasons why the requirement for Ricardian equivalence of interior transfers may not be satisfied and others have cast doubt on the model, none has questioned whether Ricardian equivalence necessarily follows from the basic elements of Barro's model. In addressing this issue, the strategic game between an altruistic parent and a possibly altruistic child is examined. It is shown, under the extended Nash bargaining solution, that Ricardian equivalence will almost never hold. In Barro's model, the child appears to be quite passive and simply takes whatever transfer is given. For families with reciprocal altruism, the problem is one of competing altruism. In such a setting, the assumption that each player simply accepts whatever is offered seems unrealistic.

**Kusago, Takayoshi and Bradford L Barham** (2001): "Perfect heterogeneity, power, and intrahousehold decision-making in rural Malaysia";

[Studies, Households, Gender, Consumption, Microeconomics, Economic models, Regression analysis]

This paper examines conjugal household responsibilities/roles, preference heterogeneity and intrahousehold power relations in rural Malay families. Its three major contributions are to: provide an effective initial indicator of separate spheres within the family; develop and implement a method for measuring the extent of conjugal preference heterogeneity; and, illustrate the value of combining this direct measure of preference heterogeneity with a measure of power in estimating household expenditure patterns for three major items, food, schooling, and housing improvement. These three measurement innovations applied to the rural Malaysia context demonstrate the potential for more direct efforts to model and measure intrahousehold decisions.



**Lee, Yean-Ju, et al.** (1994): "Sons, daughters, and intergenerational support in Taiwan";

[Social research, Personal finance, Families & family life, Economic development]

A study examining married children's financial support for their parents in Taiwan is presented. The socioeconomic characteristics of the parents and children in the families where financial transfers occurred indicate that the altruism/corporate group model best portrays intergenerational transaction during a period of rapid economic growth.

**Lillard, Lee A and Robert J Willis** (1997): "Motives for intergenerational transfers: Evidence from Malaysia";

[Intergenerational relationships, Money, Old age benefits, Studies, Statistical analysis, Generations, Hypotheses, Transfers]

A number of hypotheses about motives for intergenerational transfers within the family are discussed. Data is used on time and money transfers between generations in Malaysia, where there is neither Social Security nor Medicare, to explore these hypotheses empirically. Evidence is found supporting the hypotheses that children are an important source of old age security, and that old age security is, in part, children's repayment for parental investments in their education. This repayment is partly a function of the children's income and, in the case of females, a function of their spouse's income. Evidence is also found supporting the hypotheses that parents and children engage in the exchange of time help for money.

**Lundberg, Shelly J, et al.** (1997): "Do husbands and wives pool their resources? Evidence from the United Kingdom child benefit";

[Studies, Families & family life, Personal finance, Poolings of interest, Economic models, Clothing, Consumer spending, Consumer behaviour, Income redistribution, Sexes]

Common preference models of family behaviour imply income pooling, a restriction on family demand functions such that only the sum of husband's income and wife's income affects the allocation of goods and time. Testing the pooling hypothesis is difficult because most family income sources are not exogenous to the allocations being analysed. A study presents an alternative test based on a natural experiment - a policy change in the UK that transferred a substantial child allowance to wives in the late 1970s. Using Family Expenditure Survey data, the study finds strong evidence that a shift toward greater expenditures on women's clothing and children's clothing relative to men's clothing coincided with this income redistribution.

**Maitra, Pushkar and Ranjan Ray** (2003): "The effect of transfers on household expenditure patterns and poverty in South Africa";

[Studies, Poverty, Property transfers, Family income]

This paper uses household level unit record data from South Africa to examine the behavioural and welfare impacts of private and public transfers. It allows for joint endogeneity of resource variables and the expenditure shares. Results show that crowding out of private transfers as a result of the introduction of public pensions holds only for poor households and not for the non-poor. Both private transfers and public pensions significantly reduce poverty but private transfers have a larger impact on expenditure patterns. The results also reject the hypothesis of income pooling underlying the conventional unitary model by finding that the marginal impact on expenditures are different for public pension received, private transfer received and other resources flowing into the household. The principal conclusions are robust to changes in specification.

**Neumark, David.** (1994): "Labor and demographic economics -- On the economics of marriage: A theory of marriage, labor and divorce by Shoshana Grossbard-Shechtman";

[Nonfiction, Marriage, Labor force, Economics, Divorce]

Book Review of Grossbard-Shechtman, Shoshana. On the economics of marriage: A theory of marriage, labour, and divorce. Boulder and Oxford: Westview Press, 1993. [ISBN:0-8133-8527-X]

**Parish, William L and Robert J Willis** (1993): "Daughters, education, and family budgets: Taiwan experiences";

[Statistical analysis, Family income, Education, Economic theory, Economic models]

Growth in the education of the labour force is one of the most important determinants of economic growth, and the distribution by sex is a key determination of gender inequality. How parents choose to invest in sons' education versus daughters' education and the consequences of these choices for women's life chances are investigated using retrospective data on the life cycle and family behaviour of Taiwanese individuals who came of age from the 1940s onward. Broadly, the findings support economic models of the family in which attempts by altruistic parents to finance optimal investments in their children's human capital are frustrated by credit constraints. In poor families and in older cohorts, older sisters help increase the education of younger siblings of both sexes. In more recent periods and among more affluent families, there is less need for one child to sacrifice for another and the effects of family size and gender composition are markedly weaker.

**Pezzin, Liliana E and Barbara Steinberg Schone** (1997): "The allocation of resources in intergenerational households: Adult children and their elderly parents";

[Studies, Households, Resource allocation, Intergenerational relationships, Elder care, Economic models, Public policy]

An attempt is made to: 1. contribute to the empirical literature testing the validity of the pooling restriction implied by common-preference models against the more general bargaining-framework models of intrahousehold resource allocation, and 2. examine the potential policy implications of intrafamily distribution of income for the welfare of elderly adults.

**Phipps, Shelley A and Peter S Burton** (1995): "Sharing within families: Implications for the measurement of poverty among individuals in Canada";

[Poverty, Income distribution, Implications, Families & family life, Economic theory, Economic policy, Perceptions, Feminism, Economics]

Many of the issues raised by feminist economists have very important economic policy implications. The policy relevance of feminist economics is illustrated through an examination of one particular issue - sharing within families. One major objection to neo-classical economic theory raised by feminist economists is that traditional theory neglects what goes on within families. An examination is made of policy relevance of this feminist critique by asking whether an understanding of the poverty experiences of individual Canadians is significantly affected by the assumptions made about how financial resources are shared within families. Using microdata from the 1982, 1986, and 1992 Family Expenditure Surveys, a simulation is made of the consequences of alternative sharing rules - from equal sharing to minimal sharing. It is concluded that it matters a great deal that assumptions are made about how financial resources are shared within families.

**Plug, Erik J S and Bernard M S. Van Praag** (1998): "Similarity in response behavior between household members: An application to income evaluation";

[Individual welfare function; Household welfare function; Minimum income question; Household response behaviour]

In many household survey questions are posed to one of the members of the household, assuming that he or she represents the household. For observed behaviour this is mostly permissible; however, for attitudes and opinions, the representativeness is dubious. The finding that for subjective questions of the Leyden-type both adult partners appear to answer almost identically.

**Pollak, Robert** (1985): "A Transaction Cost Approach to Families and Households";

[Household production, transaction cost approach, bargaining over intra-family resource reallocation]

Although the metaphor of household production can usefully be applied to a wide range of activities, the formal framework of the household production model is best suited to analysing processes that combine household time and purchased inputs to produce well-defined and measurable outputs. The family's role in many economic activities, however, is explicable not in terms of technology but of governance. The transaction cost approach provides a new perspective on families and households. Unlike the new home economics, which focuses exclusively on household production, it recognises the importance of household organisation and family structure. The transaction cost approach views marriage as a "governance structure", emphasises the role of "bargaining" within families, and draws attention to the advantages and disadvantages of family organisation in terms of incentives and monitoring, and to the special roles of "altruism" and "family loyalty". It also recognises the disadvantages of family governance: conflict spillover, the toleration of inefficient personnel, inappropriate ability match, and inability to realise economies of scale. If activities are assigned to institutions in an efficient or cost-minimising fashion, the balance of these advantages and disadvantages plays a major role in determining which activities are carried out within families and which are performed by firms, non profit organisations, or the state.

A principal defect of the transaction cost approach is its failure to provide a structure for rigorous econometric investigations. Developing such a framework requires incorporating the insights of the transaction cost approach into formal models and specifying such models in sufficient detail to permit estimation. The present essay represents a first step toward that goal. [Conclusion]

In this article Pollak discusses the theoretical advantages of the transaction cost approach compared to the new home economics. It is exclusively a verbal argumentation summing up the discussion of past 10 years in the field of family economics.

**Pollak, Robert A.** (1994): "For better or worse: The roles of power in models of distribution within marriage";

[Studies, Power, Marriage, Economic theory, Economic models]

Writers from diverse intellectual traditions inside and outside the social sciences criticise neoclassical economics for neglecting power. Their criticisms focus on economists' analyses of labour markets and of distribution within families. Marxists and feminists are among the leading critics. The classic definitions of power come from sociology and political science and resonate more for sociologists and political scientists than for economists. Economists have 3 alternative models of distribution within marriage: 1. Gary Becker's altruist model, 2. cooperative bargaining models, and 3. noncooperative bargaining models. An attempt is made to organise and order diffuse criticisms, not all of which are couched in terms of power. Criticisms that economic models of distribution between women and men neglect power fall into 3 categories - antiformal, antirhetorical, and antispecification criticisms. Emphasis is placed upon antispecification criticisms.

**Pollak, Robert A.** (2003): "Gary Becker's Contributions to Family and Household Economics";

[Studies, Households, Economic models, Equilibrium]

Gary Becker's influence on the economics of the family has been pervasive. His ideas have dominated research in the economics of the family, shaping the tools we use, the questions we ask, and the answers we give. The foundational assumptions of Becker's economic approach to the family - maximising behaviour and equilibrium - as well as such primary auxiliary assumptions as household production and interdependent preferences, are now widely accepted not only by economists but also by family sociologists, demographers, and others who study the family. Yet the interesting and provocative implications of Becker's economic approach to the family do not follow from the foundational assumptions or from the primary auxiliary assumptions. Instead they depend on contested auxiliary assumptions to which neoclassical economics has no commitment and which lack empirical support. This paper discusses the crucial role of auxiliary assumptions in Becker's analysis of the family, first in the context of preferences, then in the context of household production, and finally in the context of family or household collective choice. [PUBLICATION ABSTRACT]

**Quisumbing, Agnes R and John A Maluccio** (2003): "Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa";  
[Studies, Economic theory, Pareto optimum, Households, Assets, Regression analysis, Expenditures, Economic models, Allocations]

We test the unitary versus collective model of the household using specially designed data from Bangladesh, Ethiopia, Indonesia, and South Africa. Human capital and individual assets at the time of marriage are used as proxy measures for bargaining power. In all four countries, we reject the unitary model as a description of household behaviour, but fail to reject the hypothesis that households are Pareto-efficient. In Bangladesh and South Africa, women's assets increase expenditure shares on education, while in Ethiopia it is men's assets that have this effect. These increases have different implications for boys and girls across countries, however. [PUBLICATION ABSTRACT]

**Rosenzweig, Mark R. and Oded Stark** (1997): "Handbook of Population and Family Economics";  
The collection of chapters in the Handbook of Population and Family Economics and their organisation reflect the most recent developments in economics pertaining to population issues and the family. The rationale, contents, and organisation of the Handbook evolve from three premises. First, the family is the main arena in which population outcomes are forged. Second, there are important interactions and significant causal links across all demographic phenomena. Third, the study of the size, composition, and growth of a population can benefit from the application of economic methodology and tools. The diversity and depth of the work reviewed and presented in the Handbook conveys both the progress that has been made by economists in understanding the forces shaping population processes, including the behaviour of families, and the many questions, empirical and theoretical, that still remain.

**Rowthorn, Robert** (1999): "Marriage and trust: Some lessons from economics";  
[Marriage, Divorce, Contract, Fault]

The role of marriage as an institution for providing couples with the confidence to make long-term investments in their relationship is examined. No-fault divorce has undermined the notion of marriage as a contract, thereby reducing the security offered by marriage and promoting opportunism by men. This has weakened the bargaining power of wives, both within marriage and when divorce occurs. Current legal reforms will improve the economic position of all divorced wives, including those who are primarily responsible for the breakdown of their marriage. The latter feature will encourage opportunism by women and make men less prepared to invest in their marriage. It is argued that the only way to achieve parity between men and women, and deter opportunism by either sex, is to return to fault-based divorce. Both divorce settlements and the custody of children should depend on preceding marital conduct.

**Smith, Ian** (1998): "The Economics of Household Behaviour";  
[Nonfiction, Behaviour, Households, Textbooks, Economic models, Microeconomics, Economic theory]  
Smith reviews "The Economics of Household Behaviour" by Peter Kooreman and Sophia Wunderink.

**Solow, John L** (1994): "Paternalistic preferences, interpersonal transfers and reciprocity";  
[Utility functions, Transfers, Studies, Reciprocity, Paternalism, Opportunity costs, Equilibrium, Economic models, Consumption, Economics]

How the norm of reciprocity can play a role in supporting transfers as the equilibrium of non-cooperative behaviour is demonstrated. An example is given based on the paternalistic preferences model that Robert Pollak (1988) proposed as an extension of Gary Becker's (1981) model of altruism in the family. Where Becker assumes that children's utility levels enter as arguments in their parents' utility function, Pollak assumes that in addition, children's levels of consumption of certain goods directly affect parents' utility. When transfers are between individuals with similar incomes, things become more complicated. In this case, the anticipated effect of a transfer on the recipients' consumption will depend on the giver's expectations about how recipients will spend their own income, including whether they are expected to be foregoing consumption in order to make a transfer themselves. The opportunity cost of making a transfer will likewise depend on these expectations, since the consumption foregone will depend on the transfer received.

**Strauss, John, et al.** (2000): "Intrahousehold Allocations: A Review of Theories and Empirical Evidence"; [Microeconomic-Analyses-of-Economic-Development-(includes-macro-models); Consumer-Economics-Theory; Consumer-Economics-Empirical-Analysis; Development-; Households-; Intertemporal-Consumer-Choice; Life-Cycle-Models-and-Saving]

In this paper, we provide a survey of recent developments in the theoretical and empirical modelling of intrahousehold allocations. We focus on how the recent theory extends earlier models of household consumption and production behaviour, and in our discussion of empirical applications we focus on how the basic assumption behind the traditional household models, income pooling, is tested. We also briefly discuss recent extensions to income pooling tests. In the discussion of empirical work we try to lay out some of the difficult empirical problems related to endogeneity of covariates. In all of the empirical discussion, we focus on applications to human resources in low-income countries.

**van der Klaauw, Wilbert** (1996): "Female labour supply and marital status decisions: A life-cycle model"; [Women, Marital status, Labour force, Economic models]

A study examined the interdependence between the determinants of life-cycle marital status and labour force participation decisions of women. A dynamic utility maximisation model is presented.

**van Soest, Arthur** (1995): "Structural models of family labor supply: A discrete choice"; [Studies, Statistical analysis, Leisure, Labour supply, Family income, Economic models]

A static neoclassical structural model that explains labour supply of both spouses in 2 adults households is presented. Family preferences are described with a direct translog utility function, with the husband's leisure, the wife's leisure, and family income as its arguments. It is assumed that the choice set of each family is finite. Account is taken of the Dutch tax benefits and system. The study also allows for hours restrictions and random preferences and accounts for unobserved wages of nonworkers. The models are estimated using smooth simulated maximum likelihood. Results based upon Dutch cross-section data from 1987 are illustrated by confidence intervals for elasticities and by several policy simulations.

**Wheelock, Jane and Elizabeth Oughton** (1996): "*The Household as a Focus of Research*";

[Social conditions & trends, International, Households, Families & family life, Economic theory]

Institutional economists have played a major role in criticising rational economic man, a concept that Wordsworth was one of the first to ridicule. Less thought has been given to what economic agent might usefully replace this time worn abstraction. The strengths and weaknesses of using the household as an alternative economic agent are investigated. Since most individuals live in households, it is argued that an analysis starting to tackle a broader and more relevant research agenda than one based on the maximising individual. Drawing first on some empirical and historical material on economic change and development and the household, the relevance of starting at the level of the households is underlined. For consumption as well as labour supply decisions, the crucial unit is not the individual, but the household. Households have a variety of motivations besides narrow economic gain. Actions may be based on traditional or patriarchal reasoning, people have a need for dignity and self respect, and a need to care and nurture. Actions can also be based on reciprocity of cooperation between people.

**Willis, Robert J** (2000): "The economics of fatherhood";

[Fathers, Welfare economics, Economic theory, Children & youth, Studies, Effects]

This paper outlines some ways in which fathers' involvement in their children's lives has been approached in some recent theoretical models from family economics. A key feature of these economic models has been to treat the individuals within a household, rather than the household itself, as separate economic actors, each with their own interests and resources. This approach opens up the potential of economic models of households and family behaviour to much wider and more interesting classes of behaviour than earlier models in which the household is treated as the fundamental unit of analysis. It is also argued that important implications flow from considering children as collective goods from the point of view of both parents.

**Wirl, Franz and Gustav Feichtinger** (2002): "Intrafamilial consumption and saving under altruism and wealth considerations";

[Great Britain, economic conditions; CONSUMPTION (Economics); WEALTH; ALTRUISM]

This paper introduces a non-cooperative and dynamic framework of intrafamilial decisions where the partners obtain utility from own consumption, account for the partner's benefit from consumption (altruism), and appreciate wealth. Stationary wealth (and thus stationary consumption) decreases with respect to altruism under cooperation, but increases in the subgame-perfect equilibrium in (linear) Markov-perfect strategies. Moreover, non-cooperation reduces savings and altruism mitigates this effect. However, altruism is an imperfect substitute for commitment, and of course for cooperation, because open-loop strategies, although independent of altruism, result in greater wealth.

**Woolley, Frances R. and Judith Marshall** (1994): "*Measuring Inequality Within the Household*";

[Measurement-; Households-; Decision-making; Equality-]

The purpose of this paper is to explore a number of measures of inequality within households. We focus primarily on two types of inequality, first, inequality in money incomes, second, inequality in control over household resources. Control is measured in two ways: first, as control over the management of household finances and, second, as influence over household decision-making. We discuss arguments for and against each of the measures of inequality, and compare the measures against one another in terms of the level of inequality each measure finds. The paper does not attempt to explain inequality; instead, its aim is to discuss the question "What is it that we wish to explain?"

**Zhang, Junsen and William Chan** (1999): "Dowry and wife's welfare: A theoretical and empirical analysis";

[Economic theory, Prenuptial agreements, Wives, Social life & customs, Economic models, Studies]

Becker attributes the existence of marital transfers to inflexibility in the division of joint product within the marriage. If that were the only reason, we would not have observed the coexistence of dowries and bride-prices. This paper offers an alternative analysis. While Becker's interpretation is retained for bride-prices, a dowry is now represented as a premortem bequest by altruistic parents for a daughter. It not only increases the wealth of the new conjugal household but also enhances the bargaining power of the bride in the allocation of output within that household, thereby safeguarding her welfare. Using micro data from Taiwan, we found that a dowry improves the bride's welfare whereas a bride-price has no effect. These empirical results support the theoretical predictions of the model.

**Zweimüller, Josef, et al.** (1996): "Retirement of spouses and social security reform";

[Wives, Studies, Social security, Retirement benefits, Husbands, Family income, Economic theory, Economic models, Retirement, Reforms, Marriage]

The retirement decisions of spouses may be interdependent for various reasons: similarity of tastes, joint assets, sharing rules for income and housework, or complementarity of leisure. Because of data limitations, only a few empirical studies exist on this topic. From a policy point of view, the understanding of interdependent retirement decisions should become important if legislators in different European countries are forced to synchronise minimum retirement ages for men and women that are lower now for females in a number of countries. An examination is made of the possibility of interdependent retirement using Austrian data. The findings show an asymmetry: husbands react to changes in wives' legal minimum retirement age, wives do not react vice versa. The cross-effect on men's participation rates - resulting from a rise in women's minimum retirement age - is almost half as large as the direct effect upon the women themselves.



### 3.3 Game theoretic approaches

**Andreoni, James, et al.** (2003): "Charitable giving by married couples";  
[Studies, Donations, Couples, Decision making, Gender, Demographics]

This study examines how charitable giving is influenced by who in the household is primarily responsible for giving decisions. Looking first at single-person households, men and women are found to have significantly different tastes for giving, setting up a potential conflict for married couples. It finds that, with respect to total giving, married households tend to resolve these conflicts largely in favour of the husband's preferences. Bargaining over charitable giving, rather than letting one spouse take charge, is estimated to reduce giving by at least 6%. When the woman is the decisionmaker, she will still make a significantly different allocation of those charity dollars, preferring to give to more charities but to give less to each. Results give new insights into both the demographics of charitable giving and the costliness of household bargaining.

**Anxo, Dominique and Paul Carlin** (2004): "Intra-family time allocation to housework - French evidence";  
[Time allocation, intra-family, time use, home production, bargaining, elasticities]

We analyse new time diary data from France to explore the relationship between economic variables and husbands' share of housework time. Consistent with both bargaining and specialisation models of the family, we find that the greater the husband's share of labour income, the lower his share of housework time; the greater the wife's market hours, the lower his housework time, but the larger his share of housework time. Treating market work as endogenous substantially lowers the size of these estimates, but they remain statistically significant. A parsimonious specification based on the specialisation model generates estimates for housework share wage elasticities. The own wage elasticity of wives' housework is -0.3 and the elasticity of husbands' housework share with respect to wives' wages is +0.25.

**Ausubel, Lawrence M and Raymond J Deneckere** (1992): "Bargaining and the Right to Remain Silent";  
[Game theory, Equilibrium, Economic theory, Economic models, Bargaining, Research, Contracts]

A class of alternating-offer bargaining games with one-sided incomplete information for the case of "no gap" is analysed. If sequential equilibria are required to satisfy the additional restrictions of stationarity, monotonicity, pure strategies, and no free screening, the Silence Theorem is established. It says that, when the time interval between successive periods is made sufficiently short, the informed party never makes any serious offers in the play of alternating-offer bargaining games. A class of parametric examples suggests that the time interval required to assure silence is not especially brief. As a byproduct of the analysis, a uniform version of the Coase Conjecture is proven under the same set of assumptions. This version states that, when the time interval between successive periods is made sufficiently short, the initial serious offer by either party in an alternating-offer bargaining game must be less than a given multiple of the highest possible buyer valuation for an entire family of distribution functions.

**Barnby, Tim** (1994): "Household labor supply: Some notes on estimating a model with Pareto optimal outcomes";

[Utility functions, Statistical analysis, Pareto optimum, Labour supply, Households, Economic models]

A Pareto optimal model of household labour supply is estimated. It incorporates individual data to identify own-preference parameters. It is argued that specifying the parameter which weighs utilities within the household as a function of household characteristics completes identification, and follows directly from the set up of the Pareto problem. Robustness checks are carried out with respect to the flexibility of the utility index. Individual data are incorporated in 2 ways: by equating own-preference parameters and by equating the marginal rate of substitution of goods for leisure.

**Barnby, Tim** (1996): "Computation of Nash-bargained models of household labour supply";

[Studies, Mathematical analysis, Labour supply, Economic models, Bargaining]

A method of recovering the structural parameters of a Nash-bargaining model of household labour supply is explored. The desired hours of labour supply are computed numerically rather than analytically, thus circumventing the need for analytical tractability. This numerical procedure is then embedded in a conventional maximum-likelihood estimation to obtain estimates of the structural preference parameters. An example using Family Expenditure Survey data is reported.

**Barnby, Tim and Nina Smith** (2001): "Household labour supply in Britain and Denmark: some interpretations using a model of Pareto Optimal behaviour";

[Labour supply, Pareto optimum, Economic models, Studies, Comparative analysis]

This paper analyses the labour supply behaviour of households in Denmark and Britain. It employs models in which the preferences of individuals within the household are explicitly represented. The households are then assumed to decide on their labour supply in a Pareto Optimal fashion. Describing the structure of the household decision in this way allows preliminary results to be obtained on the internal weighting of utilities within the household.

**Beblo, Miriam** (2002): "Bargaining over Time Allocation";

[Time allocation, household bargaining, household labour supply, panel-econometric analysis]

[By P. Apps, REL, 2002] This book provides an addition to the growing literature on the intrahousehold allocation of resources. It presents modelling approaches and empirical findings from the author's dissertation thesis on the subject. The focus of the research is on the allocation of time by family members to three main activities: market labour supply, work at home and pure leisure. The study confirms the well known finding from time use survey data that women tend to work longer than men do, in terms of the total hours they allocate to market and domestic work. Women therefore have less pure leisure. The aim of the study is to shed light on the dynamic process that underlies the observed leisure differential between women and men, together with the asymmetric gender division of market and domestic work within the household.

The early chapters of the book provide a somewhat specialised survey of the literature on modelling household decision taking and the intra-household allocation of resources. Chapter 2 begins by setting out a household utility function model. Following Gronau (1977), the author differentiates between market and domestic goods. These are then assumed to be perfect substitutes that enter the utility function as a single composite consumption good, together with female and male leisures. It is important to note that this is not the standard household utility function model estimated in the microeconomic literature on family labour supply. In that literature, family utility function models are estimated on household survey data that provide information on market consumption at the level of the household and on the labour supply of each adult. Because information on time allocated to domestic work and pure leisure is missing, there can be no assigned goods in the utility function. If all family members are assumed to face the same prices, and the usual restrictions are imposed, the results yield estimates of the parameters of aggregate household demands for market consumption and the non-market times of family members. Although it is common practice to refer to the latter as "leisures," in fact they represent time allocations to domestic activity for own consumption and that of other family members.

In contrast, the leisures in the Gronau model are pure leisures. They are therefore assigned goods for which family members face different prices. Gronau was very much aware of the need for time use data for the estimation of his model and, as more recent work shows, with access to time use data the empirical specification of a family model differs from that of the standard model. Given this, the critique of the household utility function approach in the discussion of "unitary" models in chaps. 2 and 3 would seem to be misplaced. A central thesis of the book is that a dynamic bargaining framework, that allows for sequential non-cooperation between partners, offers the most empirically relevant and, from a policy perspective, the most useful approach for analysing family decision concerning labour supply, household production and leisure. Chapter 4 presents a dynamic bargaining model of time use and empirical results based on time use data from the German Socio-economic Panel (GSOEP). Chapter 5 investigates a "dominance argument" for time allocation decisions. Chapter 6 reports the results of an empirical analysis of the gender division of time within the household, again based on data from the GSOEP. The main findings from the latter are broadly consistent with the evidence on time use for other countries: women specialise strongly in domestic work and have less leisure. A fourth piece of empirical work is reported in chap. 6. This last study is based on a model in which only leisure is a private good. Market and domestic goods are treated as public goods. An important contribution of the book is to highlight the significance of time use data in empirical work on family labour supply. Without such data, we have no information on the allocation of time between domestic work and pure leisure. And if data on market consumption is available only at the household level, or if information on domestically produced substitutes for assigned market goods is missing, then empirical work will continue to be very limited. The results will not be able to tell us anything about the intrahousehold distribution of full income or consumption, or about the preferences of family members. If future empirical work is to be policy



relevant, models that fully integrate the analysis of domestic production and market labour supply, and that can also capture explicitly the intra-family effects of government policies supporting gender differences in outside opportunities, will be required. It will also be essential to specify models that can take account of the diversity in the market-domestic work choices of parents, across households with the same wage rates, non-labour incomes and demographic characteristics, so evident in the data.

**Bergstrom, Theodore C** (1996): "*Economics in a family way*";

[Economic theory, Hypotheses, Families & family life, Personal relationships, Nature, Evolution, Preferences, Game theory, Studies, Economics, Reproduction]

An examination is made of the implications of the hypothesis that human preferences were shaped by natural selection, acting through differential effects of preferences on rates of reproduction. A genetically based theory of the evolution of interpersonal sympathy among family members is outlined. The theory of cultural evolution is discussed. It is argued that natural selection of culturally transmitted preferences and attitudes operates according to a logic similar to that of natural selection of genetically transmitted traits. Evolutionary notions are then applied to the riddle of the demographic transition and to patterns of intergenerational flows of wealth. The results of studies of nonmonogamous family structures in traditional societies are related to more recent work on nonmonogamous family relations. Research that has potential for inspiring important advances in the economic theory of the family is discussed. An approach to intrafamily bargaining is advocated that is based on noncooperative bargaining theory.

**Bergstrom, Theodore C.** (1997): "A Survey of Theories of the Family";

Theodore Bergstrom's opening chapter traverses the burgeoning theoretical literature concerned with understanding the rationale for, the formation, structure and dissolution of, and resource allocations within families and households. The chapter shows how the building blocks of modern microeconomics, preferences, and technology can be used to productively study families, employing modern concepts and tools such as public goods, transferable utility, cooperative and noncooperative, and evolutionary game theory, and programming methods. Bergstrom shows how these concepts contribute to an understanding of whether the family can be considered as a single unified decision maker, how resources are allocated among members of a household, the matching of individuals in the marriage market (the assignment problem), how the marriage market influences within-household decisions, the age of marriage of men and women, nonmonogamous household structures, and the strength of the intergenerational linkages among family members. Among the important concepts discussed in this chapter are those that arise because of the close interactions of family members. These include the concepts of altruism, envy, paternalism, and interdependence which are given rigorous definitions and whose implications for behaviour and for welfare analysis are elucidated.

**Bittman, Michael ea.** (2003): "When Does Gender Trump Money? Bargaining and Time in Household Work";

[Families & family life, Gender, Family income, Households, Sex roles]

Using data from Australia and the United States, the authors explore the effect of spouses' contribution to family income on how housework is divided. Consistent with exchange-bargaining theory, women decrease their housework as their earnings increase, up to the point where both spouses contribute equally to income. In other respects, gender trumps money. The base level of housework for women is much higher. Among the small percentage of couples who are in the range where women provide 51%-100% of household income, the change in housework is opposite what exchange theory predicts: couples that deviate from the normative income standard (men make more money than women) seem to compensate with a more traditional division of household work. [PUBLICATION ABSTRACT]

**Bolin, Kristian, et al.** (2001): "The family as the health producer - when spouses are Nash-bargainers";  
[Human capital, Families & family life, Health, Statistical analysis, Economic models]

A study is presented in which the Grossman model is extended to a situation in which the family is regarded as the producer of individual health and spouses are Nash-bargainers. The model has implications for the interaction between family structure, income and the stocks of health capital and the bargaining strength of different family members. The main insight is that the possibility of divorce affects the distribution of health capital between family members. Inter alia, the impact on the distribution of health (particularly regarding child health) of changes in family policies related to the dissolution of the family is analysed.

**Bolin, Kristian, et al.** (2002): "The family as the health producer--When spouses act strategically";  
[Health; Human capital; Strategic spouses; Grossman model]

The Grossman model has been extended recently in order to take account of the fact that most people lead their lives in a family—using frameworks in which family members, respectively, (a) have common preferences and (b) are Nash-bargainers. These models, however, do not consider individual incentives for behaving strategically. In the model presented in this paper, spouses interact strategically both in the production of own health and in the production of health of other family members. We analyse, inter alia, the impact on the distribution of health of changes in family policies, such as child allowance and custody rules.

**Browning, Martin** (2000): "The saving behaviour of a two-person household";  
[Economic models, Economic theory, Households, Income distribution, Equilibrium, Comparative studies, Pensions]

The facts that wives are typically younger than their husbands and that women typically live longer than men imply that wives may have more incentive to save for old age than do husbands. A theoretical model of the determination of household saving and portfolio choice is introduced which takes into account differences and preferences for saving. The most important result is that the level and the composition (portfolio) of saving and the time path of consumption are dependent on the distribution of income within the household.

**Camerer, Colin F.** (2003): "Behavioral Game Theory. Experiments in Strategic Interaction";  
[Game theory, Decision making, Statistical decisions, Negotiation-Mathematical models]

Game theory, the formalised study of strategy, began in the 1940s by asking how emotionless geniuses should play games, but ignored until recently how average people with emotions and limited foresight actually play games. This book marks the first substantial and authoritative effort to close this gap. Colin Camerer, one of the field's leading figures, uses psychological principles and hundreds of experiments to develop mathematical theories of reciprocity, limited strategising, and learning, which help predict what real people and companies do in strategic situations. Unifying a wealth of information from ongoing studies in strategic behaviour, he takes the experimental science of behavioural economics a major step forward. He does so in lucid, friendly prose.

Behavioural game theory has three ingredients that come clearly into focus in this book: mathematical theories of how moral obligation and vengeance affect the way people bargain and trust each other; a theory of how limits in the brain constrain the number of steps of "I think he thinks . . ." reasoning people naturally do; and a theory of how people learn from experience to make better strategic decisions. Strategic interactions that can be explained by behavioural game theory include bargaining, games of bluffing as in sports and poker, strikes, how conventions help coordinate a joint activity, price competition and patent races, and building up reputations for trustworthiness or ruthlessness in business or life.

While there are many books on standard game theory that address the way ideally rational actors operate, Behavioural Game Theory stands alone in blending experimental evidence and psychology in a mathematical theory of normal strategic behaviour. It is must reading for anyone who seeks a more complete understanding of strategic thinking, from professional economists to scholars and students of economics, management studies, psychology, political science, anthropology, and biology.

**Chang, Chin Oh, et al.** (2003): "Economic and Social Status in Household Decision-Making: Evidence Relating to Extended Family Mobility";

[DECISION making; HOUSEHOLDS; RESIDENTIAL mobility]

Models of the allocation of household resources use as a decision rule either the maximisation of a household utility function or the solution to a Nash-bargaining game. The literature on residential mobility has exclusively used the former to analyse the household's decision to change location. This is despite the strong empirical evidence that allocations in other areas are more consistent with the bargaining model. In this paper micro-data from Taipei, Taiwan, are used to determine which approach is most appropriate for studying housing mobility decisions. The mobility decisions of nuclear and different types of extended family household are compared to test whether the social and economic roles of different generations affect the household decision process, as is consistent with the bargaining approach. Thus, household mobility is analysed with a richer description of household structure than is found in the current literature, which implicitly treats households as either a nuclear family or some smaller unit. The results support the bargaining model of household decision-making. Conditional probabilities differ between nuclear and extended families, when a member of the eldest generation in an extended household is the household head, and when a member of the eldest generation contributes to household earnings. Of these, it is found that economic status is paramount to social status.

**Chen, Zhigi and Frances Woolley** (2001): "A Cournot-Nash model of family decision making";

[Game theory, Decision making models, Families & family life, Studies, Resource allocation, Income distribution]

This paper models a two-person family. Each family member is utility maximising, yet family members are interdependent because of caring and public goods within the family. The two family members' interdependent utility maximisation problems are first solved using a non-cooperative, or Cournot-Nash, game theoretic framework. The Cournot-Nash equilibrium is then used as a threat point in a bargaining game. The paper provides a rigorous derivation of the properties of household demands, a full analysis of the determinants of intra-household resource allocation, including the effect of varying household bargaining power, in consideration of policy implications.

**Chiappori, Pierre-Andre** (1991): "Nash-Bargained Household Decisions: A Rejoinder";

[Utility functions, Studies, Households, Economic theory, Economic models, Critiques, Consumer behaviour, Economics]

A rejoinder to McElroy and Horney's (1990) reply discusses the scope of their previous results and explores the possibility of estimating a Nash-bargained model from independent observation of threat points. Throughout their reply, McElroy and Horney identified Chiappori's comments, which focused on the particular model developed in their 1981 paper, with the general view that no Nash bargaining model could possibly generate testable restrictions upon demand functions. This is a mere confusion. It does not follow that the concept of Nash bargaining cannot possibly have empirically testable applications, once an adequate framework is used.

**Chun, Youngsub and William Thomson** (1990): "Bargaining with uncertain disagreement points";

[Negotiations, Labour relations, Econometrics]

Management-labour conflicts where the cost of the conflict is known with certainty are discussed. Disagreement point concavity suffices to characterise the well-known one-parameter family of weighted egalitarian solutions.

**Dasgupta, Indraneel** (2000): "Women's employment, intra-household bargaining, and distribution: A two-sector analysis";

[Economic theory, Studies, Women, Employment, Labour market, Demand, Welfare economics, Economic models]

This paper investigates the intra-household impact of an expansion in employment opportunities for women in a dual labour market, when the informal sector functions as a gateway to the formal sector. A variant of the Harris-Todaro framework with two-period overlapping generations are used to model this economy. Labour allocation decisions and distribution of household consumption are determined according to the generalised Nash cooperative bargaining solution, and agents have perfect foresight. It is shown that an increase in demand for women's labour can shift intra-household distribution in favour of men and thereby reduce women's welfare.

**Dasgupta, Indraneel** (2001): "Gender-biased redistribution and intra-household distribution";

[Cournot model of household; Intra-household distribution; Inter-gender redistribution]

This paper examines the implications of income redistribution from men to women for the welfare of married women and children. A Cournot model is developed of a 2-person household where agents provide market labour and allocate their spending between a private consumption good and goods for children. It is shown that, under plausible restrictions on individual preferences, small redistributions to married women reduce their welfare. This happens because the income redistribution induces men to reduce their own spending on children by more than the amount redistributed. A relative increase in women's independent earnings may, however, improve children's welfare.

**Del Boca, Daniela** (2003): "Mothers, fathers and children after divorce: The role of institutions";

[Divorce, intra-household allocation, children welfare]

Abstract. In recent years the increase in the divorce rate in many advanced countries and the predominance of female-headed families among the poor has generated much interest in the relationship between divorce and the welfare of mothers and children. In this paper I will review a small body of economic literature which has been recently developed in order to analyse the economic consequence of divorce on the welfare of fathers, mothers and children under alternative behavioural assumptions. Important economic and econometric issues arise from an analysis of welfare in non intact households as compared with intact households. In particular the focus is on the role that institutions play in post-divorce arrangements and important implications concerning policies for child support, custody, and visitation.

**Dobbelsteen, Simone and Peter Kooreman** (1997): "Financial management, bargaining and efficiency within the household; An empirical analysis";

[Economic models, Economic theory, Studies, Bargaining, Efficiency, Households, Personal finance, Game theory, Decision making]

Data are analysed from the British Household Panel Survey on households' financial management and financial decision-making. Direct subjective information was collected by asking questions like: "Who has the final say in big financial decisions?". All questions were answered separately by both partners. Two competing models that explain how finances are organised are considered. The first model is based on a household production approach, in which behaviour is determined by an efficient allocation of both partners' time to market work, financial management, and leisure. In the second model which is game-theoretic in nature, financial management is a reflection of bargaining power. The two models have different implications for the effect of explanatory variables, in particular wages, on the dependent variables. Empirical results indicate that financial management is primarily determined by bargaining considerations.

**Doss, Cheryl R** (1996): "Testing among models of intrahousehold resource allocation";

[Many countries, Resource allocation, Households, Microeconomics, Economic models, Research, Test methods, Economic theory]

In many microeconomic studies, the household is treated as an individual for analytical purposes. Recently, however, a number of economists have recognised that households are sites of conflict as well as cooperation and have begun to use new classes of models to explain how resources are allocated among household members. A paper examines the assumptions, predictions, and empirical implications of different intrahousehold models. In particular, it analyses empirical tests that distinguish among competing models. By clarifying the similarities and differences among alternative models, the paper also clarifies what has actually been demonstrated (and what has not been demonstrated) by previous empirical studies, thus indicating specific topics in need of further research.

**Echevarria, Cristina and Antonio Merlo** (1999): "Gender differences in education in a dynamic household bargaining model";

[Studies, Economic theory, Economic models, Mothers, Households, Education expenses, Many countries, Bargaining, Sex roles]

The issue of gender differences in education is explored in the context of a two-sex overlapping generations model where men and women of each generation bargain over consumption, number of children, and investment in education of their children. It is shown that the gender difference implied by the model is smaller than the one that would result from a pure investment model. The model is used to estimate the cost to a woman of having a child. The estimate obtained is about 5% of the working lifetime of a woman.

**Elder, Harold W and Patricia M Rudolph** (2003): "Who makes the financial decisions in the households of older Americans?"

[Household decision making, Financial decision making, HRS, Ordered probit]

Household decision making is at the heart of economic activity; yet very little is known about the actual process. Traditionally, economic modelling of households has treated the decision making process as equivalent to having one person make the decisions. Dissatisfaction with this approach has led to the development of models that imply that the decisions are the product of a bargaining process within the household. We analyse data from the Health and Retirement Survey (HRS) to examine financial decision making within the households of older Americans. Our results are generally consistent with the bargaining model of household behaviour.

**Elul, Ronel, et al.** (2002): "Will you marry me? A perspective on the gender gap";

[Gender gap; Family bargaining; Household models; OLG models]

This paper develops a general equilibrium model of the gender wage gap. The difference in earnings is a consequence of a demographic regularity—that men tend to marry younger women—which may limit women's labour mobility and, hence, their average earnings. However, couples are always free not to marry, and do so only if it is in each's self-interest. The intrafamily allocation of resources is determined via non-cooperative bargaining; this leads to interesting interactions between the game played by husband and wife on the one hand, and the competitive environment in which they are immersed on the other. The predictions resulting from this model's interplay between locational choice and family bargaining are consistent with the observation that the increasing stress put by women on their careers over the past 30 years has been contemporaneous with reductions in both marriage rates and the gender gap. The model provides insight into the consequences of this for the relative welfare of men and women, as well as exploring its wider economic implications.

**Engers, Maxim and Steven Stern** (2002): "Long-term care and family bargaining";

[Economic models, Families & family life, Long term health care, Economic theory, Studies, Parents & parenting, Decision making]

The structural model of how families decide who should care for elderly parents is presented. Data are used from the National Long-Term Care Survey to estimate and test the parameters of the model. Then, the parameter estimates are used to simulate the effects of the existing long-term trends in terms of the common but untested explanations for them. Finally, the effects of alternative family bargaining rules on individual utility are simulated to measure the sensitivity of the results to the family decision-making assumptions made.

**Farmer, Amy and Jill Tiefenthaler** (1996): "Domestic violence: The value of services as signals";

[Studies, Social services, Families & family life, Economic models, Domestic violence, Women, Economics]

One of the questions asked most about domestic violence is why so many women return to their situations. The fact that many battered women reconcile with their abusers after calling the police or staying in a shelter is frustrating to those who provide services to battered women. This frustration could result in a declining quality of help for battered women. In answer to why battered women often return to the abuser, the learned-helplessness hypothesis proposes that battered women become psychologically paralysed and, therefore, submissive. The learned-helplessness theory contributed to the psychologising of domestic violence in the 1980s. While battered women use services for the security and help they provide, it is suggested that battered women are rational actors who also use services to signal their threat points. The bargaining model provides a rational explanation for why they have no intention of leaving and proposes that women who use services as signals may be better off even if they return to their relationship.

**Flinn, Christopher J** (2000): "Modes of interaction between divorced parents";

[Economic models, Child support, Law enforcement, Divorce, Studies, Economic theory]

A model is developed in which exact compliance with child support orders is synonymous with cooperative outcomes with respect to childhood expenditures. The child support order imposed by institutional agents serves as focal point for the problem of dividing the gains from cooperation. Compliance is observed when the gains from cooperation exceed the value of noncooperation for both parents. The model is estimated using administrative data from the state of Wisconsin. The estimates imply that increasing child support enforcement activities may have weak effects on the welfare of children of divorced parents.

**Grant, Simon and Atsushi Kajii** (1995): "A cardinal characterization of the Rubinstein-Safra-Thomson axiomatic bargaining theory";

[Expected utility, Economic theory, Economic models, Bargaining, Econometrics]

Rubinstein, Safra and Thomson (1992) provided an interesting reexamination of the widely applied Nash solution for a 2-person bargaining problem. They recast the usual Nash bargaining problem into a more natural setting of feasible alternatives with a disagreement outcome. The 2 players are then described by their risk preferences defined on the set of lotteries over the alternatives and the disagreement outcome. This enables them to define an ordinal Nash solution in terms of the agents' risk preferences. Essentially their ordinal solution is an outcome that is immune against possible objections. Freeing the definition of the Nash solution from utility naturally led Rubinstein, Safra and Thomson to extending its scope to non-expected utility preferences. It is contended that the assumptions imposed on the risk preferences essentially exclude any members of the rank dependent expected utility (RDEU) and betweenness families that can accommodate the very choice of paradoxes that stimulated the development of non-expected utility theory.



**Gray, Jeffrey, S** (1998): "Divorce-law changes, household bargaining, and married women's labor supply"; [Studies, Divorce, Couples, Property rights, Impact analysis, Labour supply, Property, Models, Households, Decision making]

This paper examined married women's responses to the reassignment of property rights within marriage brought about by major changes in divorce laws. Three separate data sources were used to obtain 3 principal findings. First, consistent with the Coase theorem, the reassignment of property rights within marriage does not lead to an increase in the likelihood of divorce. Second, wives who were favoured by this reassignment of property rights increased their labour supply and wives who were disadvantaged decreased their labour supply, relative to married women who did not face a redistribution of marital property rights. Third, these changes in wives' hours of market work primarily reflect changes in their home-production hours rather than changes in their consumption of leisure.

**Greenwood, Jerney , et al.** (2003): "More on marriage, fertility, and the distribution of income"; [Studies, Income distribution, Economic models, Economic theory, Marriage, Fertility, Social life & customs]

According to Pareto (1896), the distribution of income depends on "the nature of the people comprising a society, on the organisation of the latter, and, also, in part, on chance." In the model developed here the "nature of the people" is captured by attitudes toward marriage, divorce, fertility, and children. Singles search for mates in a marriage market. Married agents bargain about work, and the quantity and quality of children. They can divorce. Social policies, such as child support requirements, reflect the "organisation of the (society)." Finally, "chance" is modelled by randomness in income, marriage opportunities, and marital bliss. [PUBLICATION ABSTRACT]

**Grossbard-Shechtman, Shoshana** (2002): "A consumer theory with competitive markets for work in marriage";

[Consumer theory; Marriage; Competitive markets; Intra-household allocation]

The theory presented here aims at explaining individual consumer behaviour inside marriage and prior to marriage. It is a New Home Economics (NHE) model in the sense that it assumes the existence of household production. It is an intra-household bargaining model in the sense that it assumes that husbands and wives typically have different economic interests with respect to marriage, and they try to negotiate arrangements that suit them best. The more resources they have, the more they may obtain results that favour them rather than their spouse. This theory throws light on gender differences in demand for commercial goods that have home-produced substitutes. The theory can also explain differences in demand for different products. Predictions include that of a sex ratio effect on consumption. It is also predicted that there will be compensating differentials in marriage.

**Hiedemann, Bridget and Steven Stern** (1999): "Strategic play among family members when making long-term care decisions";

[Long-term care; Family bargaining; Structural estimation]

A strategic model for bargaining within a family to determine how to care for an elderly parent is described. The parameters of the model are estimated using data from the National Long-term Care Survey. It is found that the parameter estimates usually make sense and that the model is consistent with the data. The results have strong implications for using less structural empirical models for policy analysis.

**Hoddinott, John** (1992): "Rotten Kids or Manipulative Parents: Are Children Old Age Security in Western Kenya?"

[Utility functions, Studies, Older people, LDCs, Households, Economic models, Children, Behaviour, Polls & surveys, Families & Family life, Economics, Economic statistics, Developing countries]

A survey in western Kenya is used to examine the types and levels of assistance that children provide to elderly parents. Parents' influence on the level of assistance is assessed using a bargaining model of intergenerational transfers. The data are derived from interviews conducted with elderly households in Karateng sublocation, a Luo area located 375 kilometres west northwest of Nairobi. The results indicate that children serve as old age security by supplying food, money, and assistance with household tasks. Elderly households with more children are better cared for than those with fewer children. Moreover, the results provide support for models of household behaviour that incorporate bargaining among individual members. By engaging in manipulative behaviour, elderly parents can induce greater assistance with household tasks and monetary transfers.

**Iversen, Vegard** (2003): "Intra-Household Inequality: A Challenge for the Capability Approach?"

[Womens studies, Social research, Theory, Inequality, Feminism, Gender, Developing countries, LDCs, Households]

In this paper, the author examines the capability approach and how it applies in the context of individuals and families living together on unequal terms. The interpretations of agency, freedom, and choice in Sen's framework are analysed from a feminist perspective, and the author suggests that these important concepts invite special attention in the presence of domestic power imbalances. Problems with the interpretations embedded in the capability approach are pinpointed and adjustments proposed. Drawing on the vast literature on household behaviour in developing countries, the author argues that capabilities have a distinctly interdependent dimension. While the discussion of agency in the capability approach has been either normative or policy-oriented, exercises that seek to evaluate individual well-being should pay more attention to the existence of alternative types of power within the realm of the household. [PUBLICATION ABSTRACT]

**Kanbur, Ravi and Lawrence Haddad** (1994): "Are better off households more unequal or less unequal?"

[Studies, Family income, Equality, Economic models, Bargaining, Income, Families & family life]

The implications of intra-household bargaining models for the behaviour of intra-household inequality as a function of total household resources are investigated. Theoretical support is found for "Kuznet effects," that is, inequality changing with total resources. A theoretical rationale is also found for the "Kuznets curve" at the micro level, that is, under certain conditions, a general improvement in household resources leads to first an increase and then a decrease in intra-household inequality. An empirical investigation of such a relationship is to be found in Haddad and Kanbur (1990b). Also investigated are the implications of intra-household bargaining models for 2 questions that are prominent in the policy debate. It is found that as compared to household welfare maximisation models, bargaining models tend to lead to a greater emphasis on targeting disadvantaged members of a household. Second, support is found for the worry some commentators have expressed concerning the impact of structural adjustment on intra-household inequality.

**Kapteyn, Arie and Peter Kooreman** (1992): "Household Labor Supply: What Kind of Data Can Tell Us How Many Decision Makers There Are?"

[Studies, Pareto optimum, Labour supply, Households, Game theory, Economic models, Decision making, Consumption function]

There appears to be an increasing interest in models of household labour supply based on game theoretic notions. The neoclassical model and the cooperative game theoretic model are empirically indistinguishable as long as one only uses data on household nonlabour income and consumption and on wages and hours worked by family members. In terms of the neoclassical model, a game theoretic approach provides an argument for the occurrence of prices in the household utility function. However, this argument does not distinguish it empirically from any other consideration that would imply price-dependent preferences. At the present stage, Pareto optimality is about the only tenable assumption of household bargaining models. At the same time, this makes these models empirically indistinguishable from neoclassical models, possibly with price-dependent preferences. For a truly powerful test of the game theoretic model, one needs additional information about the players' preferences.



**Kawaguchi, Akira** (1994): "Testing neoclassical and non-neoclassical models of household labour supply"; [Studies, Regression analysis, Labour supply, Family income, Economic theory, Economic models, Labour force]

Four models of household labour supply are discussed: 1. the neoclassical model, 2. the wife as a secondary earner model, 3. in the intra-household trade model, and 4. the Nash bargaining model. The first 3 models are tested using data from the 1986 Australian Income Distribution Survey. It is found that none of these 3 models satisfied their necessary conditions. The results imply that past studies of labour supply may have imposed too restrictive assumptions. The true model is probably more complicated than what has usually been assumed, or many different types of household decisions making may exist in a society.

**Kim, Jongsoog and Lydia Zepeda** (2004): "When the work is never done: Time Allocation in US Family Farm Households";

[Time allocation, household bargaining, household labour supply, child labour, farm household]

In this paper we use a Nash-cooperative bargaining framework to examine how members of US family farm households allocate their time between work and leisure. Time allocation categories for parents include farm, off-farm, and household work, as well as leisure time; for children, the categories are farm work and leisure time. The analysis includes 227 Wisconsin dairy farm households. Most notably, the results confirm that US women and children make significant labour contributions and that both women and men are decision-makers regarding their own and their children's time allocation. The results also show that intrahousehold time allocation on US farms is gender specific, and that the father's economic status has the largest impact on the time allocation of household members. The findings also confirm that children's labour makes an important economic contribution to the operation of their family farm.

**Klasen, Stephan** (1998): "Marriage, bargaining, and intrahousehold resource allocation: Excess female mortality among adults during early German development, 1740-1860";

[Marriage, Mortality, Women, History, Demographics, Econometrics]

This article investigates sex-specific mortality rates in eighteenth- and nineteenth century rural Germany to determine whether there was any gender bias in the allocation of household resources. Family reconstitution data from 60 villages provide evidence of considerable excess female mortality among married adults.

**Klawon, Emily and Jill Tiefenthaler** (2001): "Bargaining over family size: The determinants of fertility in Brazil";

[Fertility, household bargaining, Unitary model.]

Understanding how households make fertility decisions is important to implementing effective policy to slow population growth. Most empirical studies of this decision are based on household models in which men and women are assumed to act as if they have the same preferences for the number of children. However, if men and women have different preferences regarding fertility and are more likely to assert their own preferences as their bargaining power in the household increases, policies to lower fertility rates may be more effectively targeted toward one spouse or the other. In this paper, we test the relevance of the single preferences model by investigating whether men and women's nonwage incomes have the same effects on the number of children in the household. We find that while increases in both the man and woman's nonwage income lower the number of children in the household, an equivalent increase in the woman's income has a significantly stronger effect than the man's. In addition, we find that increases in women's nonwage transfer income have the strongest effects on the fertility decisions of women with low levels of education. The most important policy implication of our results is that policies aimed at increasing the incomes of the least-educated women will be the most effective in lowering fertility rates. [PUBLICATION ABSTRACT]

**Konrad, Kai A and Kjell Erik Lommerud** (1995): "*Family policy with non-cooperative families*";

[Welfare economics, Studies, Public good, Pareto optimum, Income taxes, Income redistribution, Family income, Economic models]

An examination is made of a non-cooperative model of a family's time allocation between market work and providing a home-produced family public good (such as child care or care for the elderly). The model predicts underprovision of the public good. Because of crowding out, this does not necessarily warrant public provision. In contrast to other approaches in family economics, it is found that attempts to redistribute between spouses may alter the final distribution within the marriage, and that such a policy may be Pareto improving. It is also found that some degree of progressivity of the income tax can be welfare improving.

**Konrad, Kai A and Kjell Erik Lommerud** (2000): "*The bargaining family revisited*";

[Studies, Policy making, Investment, Education, Bargaining, Economic models, Consumer economics, Family finance, Economic impact]

We suggest a family bargaining model where human capital investment decisions are made non-cooperatively in a first stage, while day-to-day allocation of time is determined later through Nash bargaining, but with non-cooperative behaviour as the fall-back. One finding is that overinvestment in education may be even more of a problem in such a semi-cooperative model than in a fully non-cooperative one. Even though both the semi-cooperative model and the fully non-cooperative model predict overinvestment in education, policy conclusions that follow from the two models are distinctly different.

**Kooreman, Peter and Arie Kapteyn** (1990): "On the empirical implementation of some game theoretic models of household labor supply";

[Working hours, Game theory, Economic models]

Some issues in the empirical implementation of game theoretic models of household labour supply are discussed. A game theoretic model that uses data on preferred working hours as additional identifying information is used as an illustration.

**Kotlikoff, Laurence J, et al.** (1990): "A Strategic Altruism Model in Which Ricardian Equivalence Does Not Hold";

[Wealth, Transfers, Mathematical analysis, Economic theory, Economic models, Children, Research, Families & family life, Economics]

Barro (1974) showed how love of children (intergenerational altruism) can economically link current and future generations and thereby neutralise intergenerational redistribution by the government (Ricardian equivalence). While some critics have pointed out reasons why the requirement for Ricardian equivalence of interior transfers may not be satisfied and others have cast doubt on the model, none has questioned whether Ricardian equivalence necessarily follows from the basic elements of Barro's model. In addressing this issue, the strategic game between an altruistic parent and a possibly altruistic child is examined. It is shown, under the extended Nash bargaining solution, that Ricardian equivalence will almost never hold. In Barro's model, the child appears to be quite passive and simply takes whatever transfer is given. For families with reciprocal altruism, the problem is one of competing altruism. In such a setting, the assumption that each player simply accepts whatever is offered seems unrealistic.

**Kusago, Takayoshi and Bradford L Barham** (2001): "Perfect heterogeneity, power, and intrahousehold decision-making in rural Malaysia";

[Studies, Households, Gender, Consumption, Microeconomics, Economic models, Regression analysis]

This paper examines conjugal household responsibilities/roles, preference heterogeneity and intrahousehold power relations in rural Malay families. Its three major contributions are to: provide an effective initial indicator of separate spheres within the family; develop and implement a method for measuring the extent of conjugal preference heterogeneity; and, illustrate the value of combining this direct measure of preference heterogeneity with a measure of power in estimating household expenditure patterns for three major items, food, schooling, and housing improvement. These three measurement innovations applied to the rural Malaysia context demonstrate the potential for more direct efforts to model and measure intrahousehold decisions.

**Lee, Yean-Ju, et al.** (1994): "Sons, daughters, and intergenerational support in Taiwan";

[Social research, Personal finance, Families & family life, Economic development]

A study examining married children's financial support for their parents in Taiwan is presented. The socioeconomic characteristics of the parents and children in the families where financial transfers occurred indicate that the altruism/corporate group model best portrays intergenerational transaction during a period of rapid economic growth.

**Lillard, Lee A and Robert J Willis** (1997): "Motives for intergenerational transfers: Evidence from Malaysia";

[Intergenerational relationships, Money, Old age benefits, Studies, Statistical analysis, Generations, Hypotheses, Transfers]

A number of hypotheses about motives for intergenerational transfers within the family are discussed. Data is used on time and money transfers between generations in Malaysia, where there is neither Social Security nor Medicare, to explore these hypotheses empirically. Evidence is found supporting the hypotheses that children are an important source of old age security, and that old age security is, in part, children's repayment for parental investments in their education. This repayment is partly a function of the children's income and, in the case of females, a function of their spouse's income. Evidence is also found supporting the hypotheses that parents and children engage in the exchange of time help for money.

**Lindbeck, Assar** (1997): "Incentives and social norms in household behavior";

[Norms, Society, Motivation, Studies, Households, Social conditions & trends, Economics, Incentives, Savings, Consumption, Wages & salaries]

In a broad psychological perspective, both economic incentives and social norms may be regarded as giving rise to purposeful, or rational, behaviour. This means that individuals act in accordance with expected reward or punishment, even though the form these take differs substantially in the 2 cases. Many social norms may not have much to do with economic incentives. In some cases, however, it is useful to study the interaction between them. Three norms of apparent importance for householder behaviour are discussed: 1. work norms, 2. norms against wage underbidding, and 3. saving and consumption norms.

**Lundberg, Shelly and Robert A Pollak** (1993): "Separate spheres bargaining and the marriage market";

[Marriage, Family income, Families & family life, Equilibrium, Economic theory, Distribution, Economic models]

The "separate spheres" bargaining model, a new model of distribution within marriage, is introduced. It differs from divorce threat bargaining models (e.g., Manser-Brown, McElroy-Homey) in that the threat point is not divorce but a noncooperative equilibrium within marriage; this noncooperative equilibrium reflects traditional gender roles. The predictions of the model thus differ from those of divorce threat bargaining models; in the separate spheres model, cash transfer payments to the mother and payments to the father can - but need not - imply different equilibrium distributions in existing marriages. In the long run, the distributional effects of transfer policies may be substantially altered by changes in the marriage market equilibrium.

**Lundberg, Shelly and Robert A Pollak** (1994): "*Noncooperative bargaining models of marriage*";

[Studies, Marriage, Game theory, Economic theory, Economic models]

An examination is made of some simple noncooperative models of distribution within marriage in which the equilibria are not necessarily Pareto optimal, in which history and culture can affect which equilibrium is realised, and in which distribution may depend on whether resources are controlled by the husband or by the wife. Recent moves away from single-decision-maker models of the family have permitted economists to address distribution within marriage, and cooperative-bargaining models have played the central role in these moves. The next step is to permit strategic interaction between family members, by modelling distribution within marriage as a noncooperative game. Noncooperative game theory allows great flexibility in specifying the rules of the game and, unlike cooperative game theory, imposed few a priori restrictions on the nature of equilibrium outcomes. In particular, noncooperative models neither assume nor imply that all equilibria are Pareto optimal.

**Lundberg, Shelly and Robert A. Pollak** (1996): "*Bargaining and distribution in marriage*";

[Economic models, Marriage, Families & family life, Decision making]

Lundberg and Pollak review a number of simple bargaining models that permit independent agency of men and women in marriage, discuss their implications for distribution within marriage and for observed family behaviour and present a sampling of the relevant empirical evidence.

**Lundberg, Shelly and Robert A. Pollak** (2003): "*Efficiency in Marriage*";

[Marriage, Migration, Household Bargaining, Limited Commitment, Efficiency]

Economists usually assume that bargaining in marriage leads to efficient outcomes. The most convincing rationale for this assumption is the belief that efficient allocations are likely to emerge from repeated interactions in stationary environments, and that marriage provides such an environment. This paper argues that when a current decision affects future bargaining power, inefficient outcomes are plausible. If the spouses could make binding commitments-in effect, commitments to refrain from exploiting the future bargaining advantage-then the inefficiency would disappear. But spouses seldom can make binding commitments regarding allocation within marriage. To investigate the efficiency of bargaining within marriage when choices affect future bargaining power, we consider the location decisions of two-earner couples. Initial location decisions are transparent and analytically tractable examples of choices likely to affect future bargaining power, but the logic of our analysis applies to many other decisions. For example, decisions about education, fertility, and labour force participation are also potential sources of inefficiency. [PUBLICATION ABSTRACT]

**Lundberg, Shelly, et al.** (2003): "The retirement-consumption puzzle: a marital bargaining approach";

[Household consumption; Married couples; Retirement]

Evidence from several countries reveals a substantial drop in household consumption around the age of retirement that is difficult to explain with life-cycle models. Using food consumption data from more than 550 households from the Panel Study of Income Dynamics for the years 1979–1986 and 1989–1992, we find that married couple households decrease their expenditures on both food consumed at home and away from home by about 9% following the retirement of the male household head. No significant decrease in consumption is found for single households, either in a sample of males or a pooled sample of single males and females. These results are consistent with a model of marital bargaining in which wives prefer to save more than their husbands do to support an expected longer retirement period, and relative control over household decisions is affected by control over market income. The pattern of the consumption decline, which is increasing in the age gap between husband and wife, lends further support to this interpretation.

**Marchant, Mary A** (1997): "Bargaining models for farm household decision making: Discussion";

[Decision making, Women, Bargaining, Rural areas, Urban areas, Families & family life]

A bargaining-based simulation model of labour allocation is developed to compare female labour force participation in rural and urban households. The differences in women's behaviour within urban and rural family types in Italy are analysed using a bargaining model that incorporates caring and a predetermined sharing rule.

**Martinelli, Cesar and Susan W Parker** (2003): "Should transfers to poor families be conditional on school attendance? A household bargaining perspective";

[Studies, Equilibrium, Households, Bargaining, Economic models, Welfare economics]

This article considers the welfare implications of transfers to poor families that are conditional on school attendance and other forms of investment in children's human capital. Family decisions are assumed to be the result of (generalised) Nash bargaining between the two parents. We show that, as long as bequests are zero, conditional transfers are better for children than unconditional transfers. The mother's welfare may also be improved by conditional transfers. Thus, conditioning transfers to bequest-constrained families have potentially desirable intergenerational and intragenerational welfare effects. Conditioning transfers to unconstrained families make every family member worse off.

**McElroy, Marjorie B and Mary Jean Horney** (1990): "*Nash-Bargained Household Decisions: Reply*";  
[Resource allocation, Income distribution, Households, Economic theory, Economic models, Econometrics, Demand, Decisions]

Chiappori's (1988) claim that the Nash-bargaining model is of weak empirical relevance and neither convenient nor really restrictive is not correct. Nash-bargained household behaviour suggests a rich set of empirical implications extending well beyond the Pareto-efficiency of intrafamily distributions. By accounting systematically for the impact of opportunities outside the family on resource distribution within the family, Nash-bargained demand theory considerably expands on the scope of neoclassical demand theory. Such expansion can explain issues ranging from the impact of alimony and child support laws in developed societies to the intrafamily distribution of nutrition in less developed countries. For the price of the Nash model's strong assumptions, one gets strong empirical implications in a variety of contexts.

**O'Neill, Barry et al.** (2004): "*Bargaining With An Agenda*";

[Nash bargaining solution; Kalai–Smorodinsky solution; Ordinal solution; Gradual bargaining]

Gradual bargaining is represented by an agenda: a family of increasing sets of joint utilities, parameterised by time. A solution for gradual bargaining specifies an agreement at each time. We axiomatise an ordinal solution, i.e., one that is covariant with order-preserving transformations of utility. It can be viewed as the limit of step-by-step bargaining in which the agreement of the last negotiation becomes the disagreement point for the next. The stepwise agreements may follow the Nash solution, the Kalai–Smorodinsky solution or many others and still yield the ordinal solution in the limit.

**Oosterbeek, Hessel, et al.** (2003): "*The need for marriage contracts: An experimental study*";

[Marriage contracts, bargaining, experiments]

**Abstract.** A spouse who invests in relationship specific human capital enlarges the size of a couple's total surplus. Such investments typically also weaken the outside opportunities of the specialising spouse and thereby her bargaining position. Realising this, underinvestment in relationship specific human capital may result. This reduces the couple's potential surplus. Private or public marriage contracts can stipulate conditions to solve this holdup underinvestment problem. This paper reports about an experiment that addresses the practical relevance of this problem. We find that although underinvestment in home production occurs, it is less frequent than game theory predicts. That is: players are prepared to specialise in home production when backwards induction predicts them not to do so. Furthermore, we find that the non-investing spouses are less opportunistic towards their partners when the large surplus has been created by the spouse than when the size of the surplus is determined exogenously.

**Ott, Notburga** (1992): "*Intrafamily bargaining and household decisions*";

This monograph develops a model of household decisions based on a bargaining approach, which aims to provide a framework for the analysis of family behaviour. Treating the family as an economic organisation, household behaviour is explained as the co-operation of utility-maximising individuals. A model of household decisions based on a bargaining approach is developed, providing a comprehensive framework for the analysis of family behaviour. Treating the family as an economic organisation, household behaviour is explained by the co-operation of utility maximising individuals. The difference from traditional microeconomic household models is that the assumption of a joint household utility function is abandoned. Instead of this, a game theoretic approach is used to model family decisions as a result of intrafamily bargaining. Considering the development of their spouses' human capital in a dynamic approach, the long-term effects of intrafamily specialisation in market work and work at home are analysed. One major finding is that in a dynamic setting non-Pareto efficient allocations may result. Empirical tests demonstrate the relevance of the bargaining approach.

**Parkman, Allen M** (2004): "Bargaining Over Housework: The Frustrating Situation of Secondary Wage Earners";

[Statistical analysis, Studies, Housework, Gender differences, Wage differential, Families & family life, Labour force, Sex roles, Dual career couples]

This paper investigates the limited increase in housework provided by husbands in response to higher earnings and labour force participation by their wives. An explanation is provided that integrates the time availability, relative resources, and gender ideology perspectives that traditionally have been used to explain housework decisions. The outcome is the result of a bargaining process in which two concerns are identified as limiting the response of primary wage earning spouses to the employment of secondary wage earning spouses. First, the secondary wage earners' employment may in part be motivated by a concern about the durability of their marriage rather than their family's welfare. Second, a balancing of the inconveniences and the net earnings of the additional employment may be viewed as making only a limited contribution to the family's welfare. Empirical results of an analysis of the individual household tasks imply that both gender ideology and the spouses' earnings are important in determining the hours that each spouse devotes to household tasks. When making decisions about the amount of housework to perform, both spouses respond to changes in relative earnings, but the response of husbands, who are usually the primary wage earners, is smaller than that of wives, who tend to be the secondary wage earners. [PUBLICATION ABSTRACT]

**Pesquin, Claudio, et al.** (1999): "Old age security and inter-generational transfer of family farms";

[family farms, old-age security, inter-generational surplus, Nash solution]

This paper offers an economic analysis of the intra-family insurance aspect of farm transfer. Sharing of farm income by retired parents with their succeeding children may act like a pension fund. A theoretical model is adopted and a bargaining game suggested to formulate this inter-generational contract. The model is illustrated with data for family farms in a co-operative village in Israel, and the effect of farm-specific parameters (size, risk aversion, sale value of the farm) on the inter-generational distribution of farm wealth is demonstrated.

**Pezzin, Liliana E and Barbara Steinberg Schone** (1997): "The allocation of resources in intergenerational households: Adult children and their elderly parents";

[Studies, Households, Resource allocation, Intergenerational relationships, Elder care, Economic models, Public policy]

An attempt is made to: 1. contribute to the empirical literature testing the validity of the pooling restriction implied by common-preference models against the more general bargaining-framework models of intrahousehold resource allocation, and 2. examine the potential policy implications of intrafamily distribution of income for the welfare of elderly adults.

**Pezzin, Liliana E and Barbara Steinberg Schone** (1999): "Intergenerational household formation, female labor supply and informal caregiving: A bargaining approach";

[Parents & parenting, Daughters, Caregivers, Home health care, Households, Models, Studies]

Children's provision of in-kind services to their elderly parents represents an important form of economic transfers to the elderly. A joint model of informal caregiving and labour force participation decisions of adult daughters who have a frail elderly parent is developed and estimated in a broader framework of intergenerational household formation. Parent and daughter agree to a Nash bargaining rule as the solution to the household formation and intrahousehold decision making process. However, rather than severed relationships, the threat point is given by a noncooperative equilibrium defined in terms of voluntary contributions toward a public good, the parental "well-being." Maximum likelihood parameter estimates derived from the simultaneous, multiequation, endogenous switching model are generally consistent with expectations. The results indicate that competing demands on daughters' time reduce both coresidence and caregiving. It is also found that intergenerational coresidence is an important mode of assistance to elderly persons.



**Pollak, Robert** (1985): "A Transaction Cost Approach to Families and Households";

[Household production, transaction cost approach, bargaining over intra-family resource reallocation]

Although the metaphor of household production can usefully be applied to a wide range of activities, the formal framework of the household production model is best suited to analysing processes that combine household time and purchased inputs to produce well-defined and measurable outputs. The family's role in many economic activities, however, is explicable not in terms of technology but of governance.

The transaction cost approach provides a new perspective on families and households. Unlike the new home economics, which focuses exclusively on household production, it recognises the importance of household organisation and family structure. The transaction cost approach views marriage as a "governance structure", emphasises the role of "bargaining" within families, and draws attention to the advantages and disadvantages of family organisation in terms of incentives and monitoring, and to the special roles of "altruism" and "family loyalty". It also recognises the disadvantages of family governance: conflict spillover, the toleration of inefficient personnel, inappropriate ability match, and inability to realise economies of scale. If activities are assigned to institutions in an efficient or cost-minimising fashion, the balance of these advantages and disadvantages plays a major role in determining which activities are carried out within families and which are performed by firms, non profit organisations, or the state. A principal defect of the transaction cost approach is its failure to provide a structure for rigorous econometric investigations. Developing such a framework requires incorporating the insights of the transaction cost approach into formal models and specifying such models in sufficient detail to permit estimation. The present essay represents a first step toward that goal.

In this article Pollak discusses the theoretical advantages of the transaction cost approach compared to the new home economics. It is exclusively a verbal argumentation summing up the discussion of past 10 years in the field of family economics.

**Pollak, Robert A.** (1994): "For better or worse: The roles of power in models of distribution within marriage";

[Studies, Power, Marriage, Economic theory, Economic models]

Writers from diverse intellectual traditions inside and outside the social sciences criticise neoclassical economics for neglecting power. Their criticisms focus on economists' analyses of labour markets and of distribution within families. Marxists and feminists are among the leading critics. The classic definitions of power come from sociology and political science and resonate more for sociologists and political scientists than for economists. Economists have 3 alternative models of distribution within marriage: 1. Gary Becker's altruist model, 2. cooperative bargaining models, and 3. noncooperative bargaining models. An attempt is made to organise and order diffuse criticisms, not all of which are couched in terms of power. Criticisms that economic models of distribution between women and men neglect power fall into 3 categories - antiformal, antirhetorical, and antispecification criticisms. Emphasis is placed upon antispecification criticisms.

**Rosenzweig, Mark R. and Oded Stark** (1997): "Handbook of Population and Family Economics";

The collection of chapters in the Handbook of Population and Family Economics and their organisation reflect the most recent developments in economics pertaining to population issues and the family. The rationale, contents, and organisation of the Handbook evolve from three premises. First, the family is the main arena in which population outcomes are forged. Second, there are important interactions and significant causal links across all demographic phenomena. Third, the study of the size, composition, and growth of a population can benefit from the application of economic methodology and tools. The diversity and depth of the work reviewed and presented in the Handbook conveys both the progress that has been made by economists in understanding the forces shaping population processes, including the behaviour of families, and the many questions, empirical and theoretical, that still remain.

**Rubinstein, Ariel, et al.** (1992): "On the Interpretation of the Nash Bargaining Solution and Its Extension to Non-Expected Utility Preferences";

[Utility functions, Studies, Preferences, Lotteries, Game theory, Expected utility, Economic models, Econometrics, Bargaining]

The foundations of the axiomatic Nash bargaining theory are reexamined. More specifically, the interpretation of the Nash bargaining solution is questioned, and it is extended to a family of non-expected utility preferences. A bargaining problem is presented, and the (ordinal)-Nash bargaining solution is defined. Revisions of the Pareto, Symmetry, and IIA Axioms characterise the (ordinal)-Nash bargaining solution. In the expected utility case, this definition is equivalent to that of the Nash bargaining solution. However, this definition is to be preferred since it allows a statement of the Nash bargaining solution in everyday language and makes possible its natural extension to a wider set of preferences. It also reveals the logic behind some of the more interesting results of the Nash bargaining solution, such as the comparative statics of risk aversion and the connection between the Nash bargaining solution and strategic models.

**Schultz, T Paul** (1990): "Testing the neoclassical model of family labor supply and fertility";

[Social research, Labour force, Income, Fertility, Families & family life]

The restriction that nonearned income of husband and wife has the same effect on family labour supply and commodity demands is relaxed by the McElroy-Horney Nash-bargaining model of family demand behaviour. This restriction is tested for the determination of husband and wife labour supply and fertility based on a survey in Thailand.

**Seaton, Jonathan S** (2001): "Bargaining versus Non-cooperation; Transaction Costs within Marriage";

[Marriage-; Marital-Dissolution; Family-Structure; Time-Allocation-and-Labour-Supply-(hours-of-work,-part-time-employment,-work-sharing,-absenteeism); Consumer-Economics-Empirical-Analysis; Expenditure-; Family-; Households-; Labour-Supply; Marriage-; Preference-; Household-Production]

Household labour supply models, which assume separate utility functions for the two principle household members, can be categorised as either non-cooperative or Pareto efficient bargaining games. In this paper a revealed preference non-parametric test is applied to UK family expenditure data to determine why some data observations are consistent with a Pareto efficient outcome. The empirical findings support the view that there are costs of bargaining within marriage and that they are typically related to the cost of female time. The implication being that as the cost of female time increases so do the transaction costs associated with a bargaining outcome.

**Seiz, Janet A.** (1995): "Bargaining models, feminism, and institutionalism";

[Sex roles, Game theory, Economics, Comparative studies, Sexes, Feminism]

An examination is made of the commonalities between feminist and institutionalist methodological concerns with a focus on assessment of one possible alternative analytical approach - game theory - as applied to one set of phenomena - gender relations in the household. It is concluded that institutionalists know a great deal that would be of value to game theorists. Likewise, game theory keeps sight of both structure and agency, which means that the broad bargaining framework provides an enormously promising approach to gender relations both in and outside the household. Thinking about some aspects of social relations in terms of bargaining and bargaining power may be useful to institutionalists and to noninstitutionalist feminists, stimulating the exploration of new questions.

**Smith, Ian** (1998): "The Economics of Household Behaviour";

[Nonfiction, Behavior, Households, Textbooks, Economic models, Microeconomics, Economic theory]

Smith reviews "The Economics of Household Behaviour" by Peter Kooreman and Sophia Wunderink.



**Snyder, Susan K** (2000): "Nonparametric testable restrictions of household behavior";

[Households, Consumer behaviour, Economic theory, Economic models, Restrictions, Utility functions, Studies]

This paper uses semialgebraic theory to derive nonparametric testable restrictions of Pareto-efficient bargaining behaviour within a household. These tests are analogous in form to the Samuelson's Weak Axiom of Revealed Preference and are defined over data on household-level consumption and individual labour supplies. Thus, without observing intra-household division of consumption, it can be nonparametrically tested whether there exist nonsatiated utility functions such that household behaviour is Pareto efficient. These tests are applied to data from the National Longitudinal Surveys on U.S. households, and it is found that preferences exist that are consistent with Pareto efficiency for each household in the data set.

**Suen, Wing, et al.** (2003): "Marital transfer and intra-household allocation: A Nash-bargaining analysis";

[Intra-household allocation; Inter-generational transfers]

This paper explores the implications of inter-generational marital transfers on the allocation of resources within a conjugal household. Adopting a Nash-bargaining framework with alternative models of the threat points, it is argued that parents have greater incentive to make transfers to a married child than to a single child because of the efficiency gains from joint consumption and production of family public goods and because of the increase in bargaining power of the child in the allocation of private consumption. Such transfers also enhance marital stability by increasing the efficiency gains from marriage.

**van der Klaauw, Wilbert** (1996): "Female labour supply and marital status decisions: A life-cycle model";

[Women, Marital status, Labour force, Economic models]

A study examined the interdependence between the determinants of life-cycle marital status and labour force participation decisions of women. A dynamic utility maximisation model is presented.

**Wax, Amy L.** (1998): "Bargaining in the shadow of the market: Is there a future for egalitarian marriage?"

[Marriage, Equality, Models, Feminism, Conservatism, Theory, Divorce, Law]

This article examines the issue of equality for women within the institution that is central to their fate and crucial to their prospects: marriage. As marriage rates decline and divorce rates rise, the institution of marriage has become the focus of a polarised debate between, on one hand, social conservatives who regard traditional marriage as an unalloyed and social good, and, on the other hand, feminist critics who view marriage as a patriarchal straitjacket that is antagonistic to women's interests. This article aims to mediate between these extremes, arguing that both camps are right, but for different reasons. Marriage presents women with a paradox. Women greatly value marriage because it significantly increases their well-being in society. But the fundamental structure of the institution of marriage makes it almost impossible for women to reap its benefits while maintaining their social equality with men.

**Wirl, Franz and Gustav Feichtinger** (2002): "Intrafamilial consumption and saving under altruism and wealth considerations";

[Great Britain, economic conditions; CONSUMPTION (Economics); WEALTH; ALTRUISM]

This paper introduces a non-cooperative and dynamic framework of intrafamilial decisions where the partners obtain utility from own consumption, account for the partner's benefit from consumption (altruism), and appreciate wealth. Stationary wealth (and thus stationary consumption) decreases with respect to altruism under cooperation, but increases in the subgame-perfect equilibrium in (linear) Markov-perfect strategies. Moreover, non-cooperation reduces savings and altruism mitigates this effect. However, altruism is an imperfect substitute for commitment, and of course for cooperation, because open-loop strategies, although independent of altruism, result in greater wealth.

**Woolley, Frances R. and Judith Marshall** (1994): "*Measuring Inequality Within the Household*";  
[Measurement-; Households-; Decision-making; Equality-]

The purpose of this paper is to explore a number of measures of inequality within households. We focus primarily on two types of inequality, first, inequality in money incomes, second, inequality in control over household resources. Control is measured in two ways: first, as control over the management of household finances and, second, as influence over household decision-making. We discuss arguments for and against each of the measures of inequality, and compare the measures against one another in terms of the level of inequality each measure finds. The paper does not attempt to explain inequality; instead, its aim is to discuss the question 'What is it that we wish to explain?'

**Zhang, Junsen** (1994): "Bequest as a public good within marriage: A note";

[Studies, Pareto optimum, Marriage, Economic models, Bequests, Wills, Parents & parenting, Gifts]

Bequest to and marriage of children can lead to a Pareto-inefficient allocation. The inefficiency (or market failure) arises because one family, making a bequest to its own child, ignores the contribution to the utility of the other family whose child enters the marriage. An analysis shows that an assortative mating rule based on bequests is a Pareto improvement if the rule is taken into account when parents make bequests to children. In the extreme case, the existence of a perfect assortative mating rule leads to a Pareto-efficient allocation in a model in which the competitive allocation would not be Pareto-efficient otherwise. It implies that arranged marriage with explicit bargaining is not the only mechanism to achieve efficiency. A non-cooperative solution may do so as well. Assortative mating rules are an important part of the latter mechanism.

**Zweimüller, Josef, et al.** (1996): "Retirement of spouses and social security reform";

[Wives, Studies, Social security, Retirement benefits, Husbands, Family income, Economic theory, Economic models, Retirement, Reforms, Marriage]

The retirement decisions of spouses may be interdependent for various reasons: similarity of tastes, joint assets, sharing rules for income and housework, or complementarity of leisure. Because of data limitations, only a few empirical studies exist on this topic. From a policy point of view, the understanding of interdependent retirement decisions should become important if legislators in different European countries are forced to synchronise minimum retirement ages for men and women that are lower now for females in a number of countries. An examination is made of the possibility of interdependent retirement using Austrian data. The findings show an asymmetry: husbands react to changes in wives' legal minimum retirement age, wives do not react vice versa. The cross-effect on men's participation rates - resulting from a rise in women's minimum retirement age - is almost half as large as the direct effect upon the women themselves.

### 3.4 The theory of collective activities

**Alderman, Harold et al.** (1995): "Unitary versus collective models of the household: Is it time to shift the burden of proof?"

[Social policy, Households, Decision making models]

Until recently, most policy analyses implicitly viewed the household as having only one set of preferences. This assumption has been a powerful tool for understanding household behaviour, such as the distribution of tasks and goods. However, a growing body of evidence suggests that this view is an expedience that comes at considerable, and possibly avoidable, cost. It is argued that more effective policy instruments will emerge from analysing the processes by which households balance the diverse interests of their members. Several formulations of the unitary model contain an assumption that inequitable distribution of resources or leisure within a household represents a willing act on the part of all household members. Similar concerns have given impetus to several collective models that focus on the individuality of the household members. These models explicitly address the question of how individual preferences lead to a collective choice. The question is raised as to whether how resources are distributed within various households, as the various theories imply, reflect appreciable differences in the outcomes of policy measures.

**Apps, Patricia F and Ray Rees** (1997): "Collective labor supply and household production";

[Studies, Criticism, Models, Households, Labour supply, Economic theory]

An attempt is made to extend Chiappori's (1992) results on the collective model of household labour supply to take account of household production, emphasising the this is essential both for identification of the sharing rule and for welfare analysis of the household. It is argued that to utilise Becker's (1965) insight can give rise to seriously misleading welfare conclusions. It is also shown that Chiappori's result on the retrievability of the partial derivatives of the sharing rule is not in general robust to this generalisation.

**Aronsson, Thomas, et al.** (2001): "Estimating Intrahousehold Allocation in a Collective Model with Household Production";

[Time-use, household production, collective model]

The purpose of this paper is to estimate the intra-family distribution of income and the individual demand for leisure and household production from Swedish cross-sectional household data. As a basis for the analysis, we use a collective model where each individual is characterised by his or her own utility function and divides total time between leisure, household production and market work. For the purpose of comparison, we also estimate a version that is consistent with a more traditional model of labour supply, the unitary model.

**Biswal, Urvashi Dhawan** (1999): "Testing the family "Common Preference" model for immigrant and non-immigrant women's labour supply";

[Studies, Labour market, Women, Economic models, Aliens, Statistical analysis, Immigrant women, Child tax benefit, Family finance]

The "income-pooling" hypothesis implicit in the "common preference" model of the family for immigrant and non-immigrant married women in Canada is tested. Two cross-sections of the Family Expenditure Survey, 1986 and 1992, are employed. The hypothesis is tested against the "bargaining" model which belongs to an alternate class of family models known as "collective" models. Consistent with previous findings, it is found that the pooling hypothesis is rejected for non-immigrant women. In addition, it is found that the pooling hypothesis is also rejected for immigrant women. The rejection of the pooling hypothesis implies that the transfer income received by a wife and the transfer income received by a husband have different effects on labour supply. This has important policy implications as to the effect on women's labour supply of transfers received by her or her spouse under family policies such as the Child Tax Benefit in Canada.

**Blundell, Richard, et al. (2001):** "Collective labour supply: Heterogeneity and non-participation";

In this paper we develop the collective labour supply framework to allow for censoring and nonparticipation in employment. We derive conditions for the complete nonparametric identification of individual preferences. We extend our results to allow for unobserved heterogeneity and show identification in the log-linear labour supply framework. We derive testable implications of the collective approach. We apply our results to the estimation of a collective labour supply model for married couples without children.

**Blundell, Richard, et al. (2002):** "Collective labour supply: Heterogeneity and non-participation";

[Labour supply, collective model, participation, sharing rule]

In this paper we extend the "collective" model of labour supply developed by Chiappori (1988) to allow for discrete choices, censoring and nonparticipation in employment. We derive the collective restrictions on labour supply functions that we contrast with restrictions implied by the usual "unitary" framework. We apply our results to the estimation of a collective labour supply model for married couples without children using UK data from 1979 to 1993. Taking into account unobserved heterogeneity, we use the popular log-linear labour supply framework. The implications of the unitary framework are rejected while those of the collective approach are not. The estimates of the sharing rule show that wages have a strong influence on bargaining power within couples.

**Blundell, Richard, et al. (2002):** "Collective labour supply with children";

We extend the collective model of household behaviour to allow for the existence of public consumption. Under a separability assumption, we show that the observation of the labour supplies and the household demand for the public good allow to identify preferences and the decision process up to some additive constant.

**Blundell, Richard and Thomas MaCurdy (1999):** "*Labor Supply: A Review of Alternative Models*";

This chapter surveys existing approaches to modelling labour supply and identifies important gaps in the literature that could be addressed in future research. The discussion begins with a look at recent policy reforms and labour market facts that motivate the study of labour supply. The analysis then presents a unifying framework that allows alternative empirical formulations of the labour supply model to be compared and their resulting elasticities to be interpreted. This is followed by critical reviews of alternative approaches to labour-supply modelling. The first review assesses the difference-in-differences approach and its relationship to natural experiments. The second analyses estimation with non-linear budget constraints and welfare-program participation. The third appraises developments of family labour-supply models including both the standard unitary and collective labour-supply formulations. The fourth briefly explores dynamic extensions of the labour supply model, characterising how participation decisions, learning-by-doing, human capital accumulation and habit formation affect the analysis of the lifecycle model. At the end of each of the four broad reviews, we summarise a selection of the recent empirical findings. The concluding section asks whether the developments reviewed in this chapter place us in a better position to answer the policy-reform questions and to interpret the trends in participation and hours with which we began this review.

**Bourguignon, Francois (1999):** "The cost of children: may the collective approach to household behavior help?"

[Consumption behaviour, intra-household allocation, cost of children]

The collective approach to household consumption behaviour tries to infer from variables supposed to affect the general bargaining position of household members information on the allocation of consumptions goods and tasks among them. This paper investigates the extension of previous work to the case where children may be considered as a public consumption good by the two adult members of a household. The main question being asked is whether it is possible to retrieve from the aggregate consumption behaviour of the household and the relative earnings of the parents information on the allocation of goods between them and children. This alternative approach to the estimation of the 'cost of children' is contrasted with the conventional approach based on a 'unitary' representation of and demographic separability assumptions on household consumption behaviour.

**Bourguignon, Francois and Pierre-Andre Chiappori** (1992): "*Collective Models of Household Behavior*";  
[Social research, Income, Economics, Consumer behaviour]

Traditionally, households have been conceptualised as an collective unit. Recently, households have been conceptualised as a group of individuals, each of whom has particular preferences. Collective models of household behaviour are examined.

**Brett, Craig** (1998): "Tax reform and collective family decision-making";

[Studies, Economic theory, Tax reform, Economic models, Pareto optimum, Households, Decision making]

Traditional analysis of tax reforms treats market behaviour as arising out of individual utility maximisation. Behaviour is modelled as the Pareto-efficient outcome of a family decision process. Conditions for the existence of a feasible, Pareto-improving tax change are presented and contrasted with those that obtain in the individualistic case. The consequences of treating households as a single individual are also discussed.

**Chiappori, Pierre-Andre** (1988): "*Rational household labor supply*";

[Microeconomy, labour supply, household behaviour, nonparametric analysis]

Traditionally, household behaviour is derived from the maximisation of a unique utility function. In this paper, we propose an alternative approach, in which the household is modelled as a two-member collectivity taking Pareto-efficient decisions. The consequences of this assumption are analysed in a three-good model, in which only total consumption and each member's labour supply are observable. If the agents are assumed egoistic (i.e., they are only concerned with their own leisure and consumption), it is possible to derive falsifiable conditions upon household labour supplies from both a parametric and nonparametric viewpoint. If, alternatively, agents are altruistic, restrictions obtain in the nonparametric context; useful interpretation stems from the comparison with the characterisation of aggregate demand for a private-good economy.

**Chiappori, Pierre-Andre** (1992): "*Collective Labor Supply and Welfare*";

[Welfare economics, Utility functions, Labour supply, Economic theory, Economic models, Families & family life, Economics]

A general, collective model of household labour supply is developed in which agents are characterised by their own, possibly altruistic, preferences and in which household decisions are only assumed to be Pareto efficient. An alternative interpretation is that there are 2 stages in the internal decision process: agents first share non-labour income according to some given sharing rule, then individual agents optimally choose their own labour supply and consumption. This setting is shown to generate testable restrictions on labour supplies. Moreover, the observation of labour supply behaviour is sufficient for recovering individual preferences and the sharing rule, up to a constant. If the household is modelled as a pair of individuals characterised by a particular utility function of their leisure and consumption, then Pareto efficiency alone generates a set of testable restrictions on labour supplies. In sharp contrast to the traditional approach, this collective setting allows one to assign private consumptions, as well as to recover individual welfare functions.

**Chiappori, Pierre-Andre** (1997): "*Introducing household production in collective models of labor supply*";

[Studies, Labour supply, Economic theory, Households, Economic models]

A model of labour supply based on a collective representation of household behaviour was recently proposed. Among the most serious shortcomings of the 1992 model is the absence of household production: as in most labour supply models, agents were assumed to divide their time between market activities and leisure. The absence of domestic production is far from innocuous as soon as welfare issues are considered.

**Chiappori, Pierre-Andre and M Browning** (1998): "Efficient Intra-Household Allocations: A General Characterisation and Empirical Tests";

[Intra-household allocation, household-bargaining, collective model, Slutsky matrix]

The neoclassical theory of demand applies to individuals, yet in empirical work it is usually taken as valid for households with many members. What the theory of individuals implies for households that have more than one member is explored. It is shown that in the collective setting household demands must satisfy a symmetry and rank condition on the Slutsky matrix. Some further results are presented on the effects on demands of variables that do not modify preferences but that do affect how decisions are made. The theory is applied to a series of surveys of household expenditures from Canada. The tests of the usual symmetry conditions are rejected for two-person households but not for one-person households. It is also shown that income pooling is rejected for two-person households. The collective setting conditions are tested for on the couples data. None of the collective setting restrictions are rejected. It is concluded that the collective setting is a plausible and tractable next step to take in the analysis of household behaviour.

**Chiappori, Pierre-Andre, et al.** (2002): "Marriage market, divorce legislation, and household labor supply"; [Studies, Labour supply, Impact analysis, Marriage, Divorce, Legislation, Households, Economic models]

This paper provides a theoretical framework for analysing the impact of the marriage market and divorce legislation on household labour supply. In the approach, the sex ratio in the marriage market and the rules governing divorce are examples of distribution factors. These factors are defined as variables that affect the household members' bargaining position but not preferences or the joint budget set. We extend the collective labour supply model developed by Chiappori to allow for distribution factors. We show that our model imposes new restrictions on the labour supply functions and eases the identification of individual preferences and the intrahousehold decision process. The model is estimated using PSID data for the year 1988.

**Chiuri, M C and P J Simmons** (1997): "Universal decentralisation: A demand system for collective and unitary models with household public goods";

[Demand, Decentralisation, Consumption, Households, Studies, Mathematical analysis, Economic models, Welfare economics, Externality, Demand analysis, Labour supply, Economic theory]

Demand systems that exhibit universal decentralisation are defined. It is argued that this concept is important in household consumption and labour supply models. It is shown that the concept nests many approaches to the analysis of individual and family behaviour. It is found that conditions for demand with universal decentralisation are the result of a household welfare maximisation procedure. The link between universal decentralisation and quasi separability is explored. There are connections between universal decentralisation and a nonlinear idea of the rank of a demand system.

**Dauphin, Anyck and Bernard Fortin** (2001): "A test of collective rationality for multi-person households";

[Intra-household allocation; Collective model; Polygamy; Extended family; Pareto optimality]

This paper provides a test of efficiency of consumption decisions in households with many decision-makers. It also presents a method of determining the number of these decision-makers. Information on some distribution factors is needed to implement this approach.

**Del Boca, Daniela** (2003): "Mothers, fathers and children after divorce: The role of institutions";

[Divorce, intra-household allocation, children welfare]

**Abstract.** In recent years the increase in the divorce rate in many advanced countries and the predominance of female-headed families among the poor has generated much interest in the relationship between divorce and the welfare of mothers and children. In this paper I will review a small body of economic literature which has been recently developed in order to analyse the economic consequence of divorce on the welfare of fathers, mothers and children under alternative behavioural assumptions. Important economic and econometric issues arise from an analysis of welfare in non intact households as compared with intact households. In particular the focus is on the role that institutions play in post-divorce arrangements and important implications concerning policies for child support, custody, and visitation.



**Doss, Cheryl R** (1996): "Testing among models of intrahousehold resource allocation";

[Many countries, Resource allocation, Households, Microeconomics, Economic models, Research, Test methods, Economic theory]

In many microeconomic studies, the household is treated as an individual for analytical purposes. Recently, however, a number of economists have recognised that households are sites of conflict as well as cooperation and have begun to use new classes of models to explain how resources are allocated among household members. A paper examines the assumptions, predictions, and empirical implications of different intrahousehold models. In particular, it analyses empirical tests that distinguish among competing models. By clarifying the similarities and differences among alternative models, the paper also clarifies what has actually been demonstrated (and what has not been demonstrated) by previous empirical studies, thus indicating specific topics in need of further research.

**Fortin, Bernard and Guy Lacroix** (1997): "A test of the unitary and collective models of household labour supply";

[Labour supply, Households, Economic models, Demographics, Family income, Statistical analysis, Studies]

The unitary and the collective household labour supply models within a structural framework are tested. A nonlinear unrestricted household labour supply system is postulated and the set of parametric restrictions imposed by each model is derived. The results generally reject the income pooling restrictions embodied in the unitary model. Also, the symmetry of cross-wage effects is rejected. However, the collective model is not rejected for groups with no pre-school children. The lack of precision of the sharing rule and individual preferences parameters indicates avenues for further empirical exploration.

**Gersbach, Hans and Hans Haller** (2001): "Collective decisions and competitive markets";

[Market economies, Competition, Households, Economics, Resource allocation]

In a general equilibrium model, we allow for households with several, typically heterogeneous, members; households that make (efficient) collective consumption decisions where different households may use different collective decision mechanisms; yet households that operate within a competitive market environment.

**Haller, Hans** (2000): "Household decisions and equilibrium efficiency";

[Equilibrium, Efficiency, Households, Economic models, Economic theory, Studies]

A general equilibrium model is introduced where a household may consist of several members, each with individual preferences or resources. When households obey collective rationality, certain intra-household externalities can be fully internalised by their respective households so that competitive exchange among households is efficient. As a rule, however, such intra-household externalities are not fully internalised by individual household members acting in their personal interest so that competitive exchange among such individuals is only efficient in exceptional cases.

**Phipps, Shelley A and Peter S Burton** (1996): "Collective models of family behaviour: Implications for economic policy";

[Studies, Social policy, Psychological aspects, Families & family life, Economic policy]

Many economists have until fairly recently treated the family as a black box - analysing the behaviour of the family rather than of the individuals within the family. The newer collective approach to modelling family behaviour is outlined which makes explicit the fact that families consist of individuals with different tastes and different experiences who may sometimes be in conflict with one another. It is argued that new developments in the economics of the family are of interest to policy-makers because many policy conclusions are sensitive to the model of the family which is adopted. The importance of the collective approach to decisions about child-support guidelines, automatic withholding of support payments, child benefits, cash versus kind transfers, and individual versus family taxation is illustrated.



**Quisumbing, Agnes R and John A Maluccio** (2003): "Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa";  
[Studies, Economic theory, Pareto optimum, Households, Assets, Regression analysis, Expenditures, Economic models, Allocations]

We test the unitary versus collective model of the household using specially designed data from Bangladesh, Ethiopia, Indonesia, and South Africa. Human capital and individual assets at the time of marriage are used as proxy measures for bargaining power. In all four countries, we reject the unitary model as a description of household behaviour, but fail to reject the hypothesis that households are Pareto-efficient. In Bangladesh and South Africa, women's assets increase expenditure shares on education, while in Ethiopia it is men's assets that have this effect. These increases have different implications for boys and girls across countries, however. [PUBLICATION ABSTRACT]

**Rosenzweig, Mark R. and Oded Stark** (1997): "Handbook of Population and Family Economics";  
The collection of chapters in the Handbook of Population and Family Economics and their organisation reflect the most recent developments in economics pertaining to population issues and the family. The rationale, contents, and organisation of the Handbook evolve from three premises. First, the family is the main arena in which population outcomes are forged. Second, there are important interactions and significant causal links across all demographic phenomena. Third, the study of the size, composition, and growth of a population can benefit from the application of economic methodology and tools. The diversity and depth of the work reviewed and presented in the Handbook conveys both the progress that has been made by economists in understanding the forces shaping population processes, including the behaviour of families, and the many questions, empirical and theoretical, that still remain.

**Sprumont, Yves** (2000): "On the testable implications of collective choice theories";  
[Studies, Economic models, Economic theory, Decision making]

Collective choices in game forms from a revealed preference viewpoint are analysed. The joint choice behaviour of  $n$  agents Nash- (respectively, Pareto- ) are called rationalisable if there exist  $n$  preferences over the conceivable joint actions such that the joint actions selected from each game form coincide with the Nash equilibria (respectively, the Pareto optima) of the corresponding game. In the two-agent case, it is shown that every deterministic joint behaviour which is Nash-rationalisable is also Pareto-rationalisable. The converse is false. General necessary and sufficient conditions for Nash-rationalisability of an  $n$ -agent joint choice behaviour are identified. Partial versions of the Nash- and Pareto rationalisability requirements are defined and characterised.

**Vermeulen, Frederic** (2002): "Collective household models: principles and main results";  
[CONSUMER behaviour; CONSUMERS' preferences; HOUSEHOLDS]

In the traditional approach to consumer behaviour it is assumed that households behave as if they were single decision-making units. This approach has methodological, empirical and welfare economic deficiencies. A valuable alternative to the traditional model is the collective approach to household behaviour. The collective approach explicitly takes account of the fact that multi-person households consist of several members which may have different preferences. Among these household members, an intrahousehold bargaining process is assumed to take place. In addition to providing an introduction to the collective approach, this survey intends to show how different collective household models, each with their own aims and assumptions, are connected.

**Willis, Robert J** (2000): "The economics of fatherhood";

[Fathers, Welfare economics, Economic theory, Children & youth, Studies, Effects]

This paper outlines some ways in which fathers' involvement in their children's lives has been approached in some recent theoretical models from family economics. A key feature of these economic models has been to treat the individuals within a household, rather than the household itself, as separate economic actors, each with their own interests and resources. This approach opens up the potential of economic models of households and family behaviour to much wider and more interesting classes of behaviour than earlier models in which the household is treated as the fundamental unit of analysis. It is also argued that important implications flow from considering children as collective goods from the point of view of both parents.

**Woolley, Frances R. and Judith Marshall** (1994): "*Measuring Inequality Within the Household*";

[Measurement-; Households-; Decision-making; Equality-]

The purpose of this paper is to explore a number of measures of inequality within households. We focus primarily on two types of inequality, first, inequality in money incomes, second, inequality in control over household resources. Control is measured in two ways: first, as control over the management of household finances and, second, as influence over household decision-making. We discuss arguments for and against each of the measures of inequality, and compare the measures against one another in terms of the level of inequality each measure finds. The paper does not attempt to explain inequality; instead, its aim is to discuss the question "What is it that we wish to explain?"

**Zweimüller, Josef, et al.** (1996): "Retirement of spouses and social security reform";

[Wives, Studies, Social security, Retirement benefits, Husbands, Family income, Economic theory, Economic models, Retirement, Reforms, Marriage]

The retirement decisions of spouses may be interdependent for various reasons: similarity of tastes, joint assets, sharing rules for income and housework, or complementarity of leisure. Because of data limitations, only a few empirical studies exist on this topic. From a policy point of view, the understanding of interdependent retirement decisions should become important if legislators in different European countries are forced to synchronise minimum retirement ages for men and women that are lower now for females in a number of countries. An examination is made of the possibility of interdependent retirement using Austrian data. The findings show an asymmetry: husbands react to changes in wives' legal minimum retirement age, wives do not react vice versa. The cross-effect on men's participation rates - resulting from a rise in women's minimum retirement age - is almost half as large as the direct effect upon the women themselves.

### 3.5 Empirical tests and/or comparisons of the main types of theory

**Alderman, Harold et al.** (1995): "Unitary versus collective models of the household: Is it time to shift the burden of proof?"

[Social policy, Households, Decision making models]

Until recently, most policy analyses implicitly viewed the household as having only one set of preferences. This assumption has been a powerful tool for understanding household behaviour, such as the distribution of tasks and goods. However, a growing body of evidence suggests that this view is an expedience that comes at considerable, and possibly avoidable, cost. It is argued that more effective policy instruments will emerge from analysing the processes by which households balance the diverse interests of their members. Several formulations of the unitary model contain an assumption that inequitable distribution of resources or leisure within a household represents a willing act on the part of all household members. Similar concerns have given impetus to several collective models that focus on the individuality of the household members. These models explicitly address the question of how individual preferences lead to a collective choice. The question is raised as to whether how resources are distributed within various households, as the various theories imply, reflect appreciable differences in the outcomes of policy measures.

**Andreoni, James, et al.** (2003): "Charitable giving by married couples";

[Studies, Donations, Couples, Decision making, Gender, Demographics]

This study examines how charitable giving is influenced by who in the household is primarily responsible for giving decisions. Looking first at single-person households, men and women are found to have significantly different tastes for giving, setting up a potential conflict for married couples. It finds that, with respect to total giving, married households tend to resolve these conflicts largely in favour of the husband's preferences. Bargaining over charitable giving, rather than letting one spouse take charge, is estimated to reduce giving by at least 6%. When the woman is the decisionmaker, she will still make a significantly different allocation of those charity dollars, preferring to give to more charities but to give less to each. Results give new insights into both the demographics of charitable giving and the costliness of household bargaining.

**Anxo, Dominique and Paul Carlin** (2004): "Intra-family time allocation to housework - French evidence";

[Time allocation, intra-family, time use, home production, bargaining, elasticities]

We analyse new time diary data from France to explore the relationship between economic variables and husbands' share of housework time. Consistent with both bargaining and specialisation models of the family, we find that the greater the husband's share of labour income, the lower his share of housework time; the greater the wife's market hours, the lower his housework time, but the larger his share of housework time. Treating market work as endogenous substantially lowers the size of these estimates, but they remain statistically significant. A parsimonious specification based on the specialisation model generates estimates for housework share wage elasticities. The own wage elasticity of wives' housework is -0.3 and the elasticity of husbands' housework share with respect to wives' wages is +0.25.

**Apps, Patricia and Ray Rees** (1999): "On the taxation of trade within and between households";

[Tax reform, Households, Production functions, Economic models, Studies, Industrialised nations, International]

Tax reform proposals affect individual welfares in ways which strongly depend on the nature of specialisation in household production and the pattern of trade within households. Variation in the degree of specialisation in domestic production across households strongly influences the impacts on individual tax burdens of a given tax reform. The standard models of the economics literature cannot be used to analyse these issues because they ignore the two-person nature of households and the existence of household production and trade. A simple and tractable model is proposed to remedy this and is used to analyse the impacts of the types of tax reform that have been the subject of recent policy debate.

**Apps, Patricia and Ray Rees** (1999): "Individual versus joint taxation in models with household production";

[Utility functions, Economic models, Pareto optimum, Taxation economics, Equilibrium, Welfare economics, Studies, Equilibrium]

In a recent paper, Piggott and Whalley (1996) challenge the conventional wisdom that says that the individual rather than the household should be the unit of taxation and argue instead for joint taxation. The weakness in the Piggott-Whalley reasoning lies in its failure to take account of the main conclusion of the theory of the second-best. The Piggott-Whalley calculations show that a move from an existing tax structure with unequal marginal tax rates for primary and secondary workers, to joint taxation, which equalises these tax rates, can increase welfare. It must then be possible to achieve a further welfare improvement by departing in some direction from the joint taxation structure reached, as long as it is not a second-best optimum. A formal analysis of these points is provided.

**Aronsson, Thomas, et al.** (2001): "Estimating Intrahousehold Allocation in a Collective Model with Household Production";

[Time-use, household production, collective model]

The purpose of this paper is to estimate the intra-family distribution of income and the individual demand for leisure and household production from Swedish cross-sectional household data. As a basis for the analysis, we use a collective model where each individual is characterised by his or her own utility function and divides total time between leisure, household production and market work. For the purpose of comparison, we also estimate a version that is consistent with a more traditional model of labour supply, the unitary model.

**Biswal, Urvashi Dhawan** (1999): "Testing the family "Common Preference" model for immigrant and non-immigrant women's labour supply";

[Studies, Labour market, Women, Economic models, Aliens, Statistical analysis, Immigrant women, Child tax benefit, Family finance]

The "income-pooling" hypothesis implicit in the "common preference" model of the family for immigrant and non-immigrant married women in Canada is tested. Two cross-sections of the Family Expenditure Survey, 1986 and 1992, are employed. The hypothesis is tested against the "bargaining" model which belongs to an alternate class of family models known as "collective" models. Consistent with previous findings, it is found that the pooling hypothesis is rejected for non-immigrant women. In addition, it is found that the pooling hypothesis is also rejected for immigrant women. The rejection of the pooling hypothesis implies that the transfer income received by a wife and the transfer income received by a husband have different effects on labour supply. This has important policy implications as to the effect on women's labour supply of transfers received by her or her spouse under family policies such as the Child Tax Benefit in Canada.

**Blundell, Richard, et al.** (2002): "Collective labour supply: Heterogeneity and non-participation";

[Labour supply, collective model, participation, sharing rule]

In this paper we extend the "collective" model of labour supply developed by Chiappori (1988) to allow for discrete choices, censoring and nonparticipation in employment. We derive the collective restrictions on labour supply functions that we contrast with restrictions implied by the usual "unitary" framework. We apply our results to the estimation of a collective labour supply model for married couples without children using UK data from 1979 to 1993. Taking into account unobserved heterogeneity, we use the popular log-linear labour supply framework. The implications of the unitary framework are rejected while those of the collective approach are not. The estimates of the sharing rule show that wages have a strong influence on bargaining power within couples.

**Bourguignon, Francois** (1999): "The cost of children: may the collective approach to household behavior help?"

[Consumption behaviour, intra-household allocation, cost of children]

The collective approach to household consumption behaviour tries to infer from variables supposed to affect the general bargaining position of household members information on the allocation of consumptions goods and tasks among them. This paper investigates the extension of previous work to the case where children may be considered as a public consumption good by the two adult members of a household. The main question being asked is whether it is possible to retrieve from the aggregate consumption behaviour of the household and the relative earnings of the parents information on the allocation of goods between them and children. This alternative approach to the estimation of the 'cost of children' is contrasted with the conventional approach based on a 'unitary' representation of and demographic separability assumptions on household consumption behaviour.

**Brett, Craig** (1998): "Tax reform and collective family decision-making";

[Studies, Economic theory, Tax reform, Economic models, Pareto optimum, Households, Decision making]

Traditional analysis of tax reforms treats market behaviour as arising out of individual utility maximisation. Behaviour is modelled as the Pareto-efficient outcome of a family decision process. Conditions for the existence of a feasible, Pareto-improving tax change are presented and contrasted with those that obtain in the individualistic case. The consequences of treating households as a single individual are also discussed.

**Burgoyne, Carole B** (1995): "Financial organisation and decision-making within Western "households"";

[Studies, Psychological aspects, Personal finance, Households, Economic theory, Decision making]

Papers by Pahl (1995), Wunderink (1995), and Kirchler (1995) are considered. Each of the authors is concerned with different but related aspects of household financial organisation and decision-making. It is argued that it is very important to understand individual economic behaviour in such domains. Moreover, it is necessary to pay particular attention to constraints associated with specific roles played by different members of a household, as well as to the pervasive influence of gender. Each of the authors' contributions is evaluated critically, and constructive proposals are offered as to how such work could and should be extended in future research. In particular, considerable effort will be needed to develop an understanding of the household in non-Western cultures.

**Chang, Chin Oh, et al.** (2003): "Economic and Social Status in Household Decision-Making: Evidence Relating to Extended Family Mobility";

[DECISION making; HOUSEHOLDS; RESIDENTIAL mobility]

Models of the allocation of household resources use as a decision rule either the maximisation of a household utility function or the solution to a Nash-bargaining game. The literature on residential mobility has exclusively used the former to analyse the household's decision to change location. This is despite the strong empirical evidence that allocations in other areas are more consistent with the bargaining model. In this paper micro-data from Taipei, Taiwan, are used to determine which approach is most appropriate for studying housing mobility decisions. The mobility decisions of nuclear and different types of extended family household are compared to test whether the social and economic roles of different generations affect the household decision process, as is consistent with the bargaining approach. Thus, household mobility is analysed with a richer description of household structure than is found in the current literature, which implicitly treats households as either a nuclear family or some smaller unit. The results support the bargaining model of household decision-making. Conditional probabilities differ between nuclear and extended families, when a member of the eldest generation in an extended household is the household head, and when a member of the eldest generation contributes to household earnings. Of these, it is found that economic status is paramount to social status.

**Chiappori, Pierre-Andre and M Browning** (1998): "Efficient Intra-Household Allocations: A General Characterisation and Empirical Tests";

[Intra-household allocation, household-bargaining, collective model, Slutsky matrix]

The neoclassical theory of demand applies to individuals, yet in empirical work it is usually taken as valid for households with many members. What the theory of individuals implies for households that have more than one member is explored. It is shown that in the collective setting household demands must satisfy a symmetry and rank condition on the Slutsky matrix. Some further results are presented on the effects on demands of variables that do not modify preferences but that do affect how decisions are made. The theory is applied to a series of surveys of household expenditures from Canada. The tests of the usual symmetry conditions are rejected for two-person households but not for one-person households. It is also shown that income pooling is rejected for two-person households. The collective setting conditions are tested for on the couples data. None of the collective setting restrictions are rejected. It is concluded that the collective setting is a plausible and tractable next step to take in the analysis of household behaviour.

**Chiuri, M C and P J Simmons** (1997): "Universal decentralisation: A demand system for collective and unitary models with household public goods";

[Demand, Decentralisation, Consumption, Households, Studies, Mathematical analysis, Economic models, Welfare economics, Externality, Demand analysis, Labour supply, Economic theory]

Demand systems that exhibit universal decentralisation are defined. It is argued that this concept is important in household consumption and labour supply models. It is shown that the concept nests many approaches to the analysis of individual and family behaviour. It is found that conditions for demand with universal decentralisation are the result of a household welfare maximisation procedure. The link between universal decentralisation and quasi separability is explored. There are connections between universal decentralisation and a nonlinear idea of the rank of a demand system.

**Del Boca, Daniela** (2003): "Mothers, fathers and children after divorce: The role of institutions";

[Divorce, intra-household allocation, children welfare]

Abstract. In recent years the increase in the divorce rate in many advanced countries and the predominance of female-headed families among the poor has generated much interest in the relationship between divorce and the welfare of mothers and children. In this paper I will review a small body of economic literature which has been recently developed in order to analyse the economic consequence of divorce on the welfare of fathers, mothers and children under alternative behavioural assumptions. Important economic and econometric issues arise from an analysis of welfare in non intact households as compared with intact households. In particular the focus is on the role that institutions play in post-divorce arrangements and important implications concerning policies for child support, custody, and visitation.

**Dobbelsteen, Simone and Peter Kooreman** (1997): "Financial management, bargaining and efficiency within the household; An empirical analysis";

[Economic models, Economic theory, Studies, Bargaining, Efficiency, Households, Personal finance, Game theory, Decision making]

Data are analysed from the British Household Panel Survey on households' financial management and financial decision-making. Direct subjective information was collected by asking questions like: "Who has the final say in big financial decisions?". All questions were answered separately by both partners. Two competing models that explain how finances are organised are considered. The first model is based on a household production approach, in which behaviour is determined by an efficient allocation of both partners' time to market work, financial management, and leisure. In the second model which is game-theoretic in nature, financial management is a reflection of bargaining power. The two models have different implications for the effect of explanatory variables, in particular wages, on the dependent variables. Empirical results indicate that financial management is primarily determined by bargaining considerations.



**Doss, Cheryl R** (1996): "Testing among models of intrahousehold resource allocation";

[Many countries, Resource allocation, Households, Microeconomics, Economic models, Research, Test methods, Economic theory]

In many microeconomic studies, the household is treated as an individual for analytical purposes. Recently, however, a number of economists have recognised that households are sites of conflict as well as cooperation and have begun to use new classes of models to explain how resources are allocated among household members. A paper examines the assumptions, predictions, and empirical implications of different intrahousehold models. In particular, it analyses empirical tests that distinguish among competing models. By clarifying the similarities and differences among alternative models, the paper also clarifies what has actually been demonstrated (and what has not been demonstrated) by previous empirical studies, thus indicating specific topics in need of further research.

**Elder, Harold W and Patricia M Rudolph** (2003): "Who makes the financial decisions in the households of older Americans?"

[Household decision making, Financial decision making, HRS, Ordered probit]

Household decision making is at the heart of economic activity; yet very little is known about the actual process. Traditionally, economic modelling of households has treated the decision making process as equivalent to having one person make the decisions. Dissatisfaction with this approach has led to the development of models that imply that the decisions are the product of a bargaining process within the household. We analyse data from the Health and Retirement Survey (HRS) to examine financial decision making within the households of older Americans. Our results are generally consistent with the bargaining model of household behaviour.

**Fortin, Bernard and Guy Lacroix** (1997): "A test of the unitary and collective models of household labour supply";

[Labour supply, Households, Economic models, Demographics, Family income, Statistical analysis, Studies]

The unitary and the collective household labour supply models within a structural framework are tested. A nonlinear unrestricted household labour supply system is postulated and the set of parametric restrictions imposed by each model is derived. The results generally reject the income pooling restrictions embodied in the unitary model. Also, the symmetry of cross-wage effects is rejected. However, the collective model is not rejected for groups with no pre-school children. The lack of precision of the sharing rule and individual preferences parameters indicates avenues for further empirical exploration.

**Heath, Julia A** (1990): "Non-Employed Women, Marriage and the Sisyphus Syndrome";

[Women, Wage rates, Statistical analysis, Opportunity costs, Marriage, Human capital, Family, Economics, Economic theory, Divorce, Homemakers, Home economics, Families & family life]

Traditional economic models of the family have consistently assigned an opportunity cost to a nonemployed wife's time spent in home activities. This treatment of assigning a market value to a nonmarket activity distorts the processes by which wives' nonparticipation in the labour force leads to greater marital stability. Marriage for a nonemployed woman is like the work of Sisyphus: routine, repetitive, and unvalued by the economic standards of society. On the other hand, neoclassical theory asserts that marital stability is increased if the wife works exclusively in the nonmarket sector through the accumulation of marriage-specific capital, causing the payoff to remaining married to be high. In fact, the observed relationship between marital stability and the wife's lack of labour force participation occurs because her divorce payoff is low. The Sisyphus syndrome has profound policy implications. The family structure is significantly affected by labour force participation and human capital accumulation by women.



**Iversen, Vegard** (2003): "Intra-Household Inequality: A Challenge for the Capability Approach?"

[Womens studies, Social research, Theory, Inequality, Feminism, Gender, Developing countries, LDCs, Households]

In this paper, the author examines the capability approach and how it applies in the context of individuals and families living together on unequal terms. The interpretations of agency, freedom, and choice in Sen's framework are analysed from a feminist perspective, and the author suggests that these important concepts invite special attention in the presence of domestic power imbalances. Problems with the interpretations embedded in the capability approach are pinpointed and adjustments proposed. Drawing on the vast literature on household behaviour in developing countries, the author argues that capabilities have a distinctly interdependent dimension. While the discussion of agency in the capability approach has been either normative or policy-oriented, exercises that seek to evaluate individual well-being should pay more attention to the existence of alternative types of power within the realm of the household. [PUBLICATION ABSTRACT]

**Kapteyn, Arie and Peter Kooreman** (1992): "Household Labor Supply: What Kind of Data Can Tell Us How Many Decision Makers There Are?"

[Studies, Pareto optimum, Labour supply, Households, Game theory, Economic models, Decision making, Consumption function]

There appears to be an increasing interest in models of household labour supply based on game theoretic notions. The neoclassical model and the cooperative game theoretic model are empirically indistinguishable as long as one only uses data on household nonlabour income and consumption and on wages and hours worked by family members. In terms of the neoclassical model, a game theoretic approach provides an argument for the occurrence of prices in the household utility function. However, this argument does not distinguish it empirically from any other consideration that would imply price-dependent preferences. At the present stage, Pareto optimality is about the only tenable assumption of household bargaining models. At the same time, this makes these models empirically indistinguishable from neoclassical models, possibly with price-dependent preferences. For a truly powerful test of the game theoretic model, one needs additional information about the players' preferences.

**Kawaguchi, Akira** (1994): "Testing neoclassical and non-neoclassical models of household labour supply";

[Studies, Regression analysis, Labour supply, Family income, Economic theory, Economic models, Labour force]

Four models of household labour supply are discussed: 1. the neoclassical model, 2. the wife as a secondary earner model, 3. in the intra-household trade model, and 4. the Nash bargaining model. The first 3 models are tested using data from the 1986 Australian Income Distribution Survey. It is found that none of these 3 models satisfied their necessary conditions. The results imply that past studies of labour supply may have imposed too restrictive assumptions. The true model is probably more complicated than what has usually been assumed, or many different types of household decisions making may exist in a society.

**Klawon, Emily and Jill Tiefenthaler** (2001): "Bargaining over family size: The determinants of fertility in Brazil";

[Fertility, household bargaining, Unitary model.]

Understanding how households make fertility decisions is important to implementing effective policy to slow population growth. Most empirical studies of this decision are based on household models in which men and women are assumed to act as if they have the same preferences for the number of children. However, if men and women have different preferences regarding fertility and are more likely to assert their own preferences as their bargaining power in the household increases, policies to lower fertility rates may be more effectively targeted toward one spouse or the other. In this paper, we test the relevance of the single preferences model by investigating whether men and women's nonwage incomes have the same effects on the number of children in the household. We find that while increases in both the man and woman's nonwage income lower the number of children in the household, an equivalent increase in the woman's income has a significantly stronger effect than the man's. In addition, we find that increases in women's nonwage transfer income have the strongest effects on the fertility decisions of women with low levels of education. The most important policy implication of our results is that policies aimed at increasing the incomes of the least-educated women will be the most effective in lowering fertility rates. [PUBLICATION ABSTRACT]

**Kusago, Takayoshi and Bradford L Barham** (2001): "Perfect heterogeneity, power, and intrahousehold decision-making in rural Malaysia";

[Studies, Households, Gender, Consumption, Microeconomics, Economic models, Regression analysis]

This paper examines conjugal household responsibilities/roles, preference heterogeneity and intrahousehold power relations in rural Malay families. Its three major contributions are to: provide an effective initial indicator of separate spheres within the family; develop and implement a method for measuring the extent of conjugal preference heterogeneity; and, illustrate the value of combining this direct measure of preference heterogeneity with a measure of power in estimating household expenditure patterns for three major items, food, schooling, and housing improvement. These three measurement innovations applied to the rural Malaysia context demonstrate the potential for more direct efforts to model and measure intrahousehold decisions.

**Lee, Yean-Ju, et al.** (1994): "Sons, daughters, and intergenerational support in Taiwan";

[Social research, Personal finance, Families & family life, Economic development]

A study examining married children's financial support for their parents in Taiwan is presented. The socioeconomic characteristics of the parents and children in the families where financial transfers occurred indicate that the altruism/corporate group model best portrays intergenerational transaction during a period of rapid economic growth.

**Lillard, Lee A and Robert J Willis** (1997): "Motives for intergenerational transfers: Evidence from Malaysia";

[Intergenerational relationships, Money, Old age benefits, Studies, Statistical analysis, Generations, Hypotheses, Transfers]

A number of hypotheses about motives for intergenerational transfers within the family are discussed. Data is used on time and money transfers between generations in Malaysia, where there is neither Social Security nor Medicare, to explore these hypotheses empirically. Evidence is found supporting the hypotheses that children are an important source of old age security, and that old age security is, in part, children's repayment for parental investments in their education. This repayment is partly a function of the children's income and, in the case of females, a function of their spouse's income. Evidence is also found supporting the hypotheses that parents and children engage in the exchange of time help for money.

**Pezzin, Liliana E and Barbara Steinberg Schone** (1997): "The allocation of resources in intergenerational households: Adult children and their elderly parents";  
[Studies, Households, Resource allocation, Intergenerational relationships, Elder care, Economic models, Public policy]

An attempt is made to: 1. contribute to the empirical literature testing the validity of the pooling restriction implied by common-preference models against the more general bargaining-framework models of intrahousehold resource allocation, and 2. examine the potential policy implications of intrafamily distribution of income for the welfare of elderly adults.

**Phipps, Shelley A and Peter S Burton** (1995): "Sharing within families: Implications for the measurement of poverty among individuals in Canada";  
[Poverty, Income distribution, Implications, Families & family life, Economic theory, Economic policy, Perceptions, Feminism, Economics]

Many of the issues raised by feminist economists have very important economic policy implications. The policy relevance of feminist economics is illustrated through an examination of one particular issue - sharing within families. One major objection to neo-classical economic theory raised by feminist economists is that traditional theory neglects what goes on within families. An examination is made of policy relevance of this feminist critique by asking whether an understanding of the poverty experiences of individual Canadians is significantly affected by the assumptions made about how financial resources are shared within families. Using microdata from the 1982, 1986, and 1992 Family Expenditure Surveys, a simulation is made of the consequences of alternative sharing rules - from equal sharing to minimal sharing. It is concluded that it matters a great deal that assumptions are made about how financial resources are shared within families.

**Pollak, Robert** (1985): "A Transaction Cost Approach to Families and Households";  
[Household production, transaction cost approach, bargaining over intra-family resource reallocation]

Although the metaphor of household production can usefully be applied to a wide range of activities, the formal framework of the household production model is best suited to analysing processes that combine household time and purchased inputs to produce well-defined and measurable outputs. The family's role in many economic activities, however, is explicable not in terms of technology but of governance. The transaction cost approach provides a new perspective on families and households. Unlike the new home economics, which focuses exclusively on household production, it recognises the importance of household organisation and family structure. The transaction cost approach views marriage as a "governance structure", emphasises the role of "bargaining" within families, and draws attention to the advantages and disadvantages of family organisation in terms of incentives and monitoring, and to the special roles of "altruism" and "family loyalty". It also recognises the disadvantages of family governance: conflict spillover, the toleration of inefficient personnel, inappropriate ability match, and inability to realise economies of scale. If activities are assigned to institutions in an efficient or cost-minimising fashion, the balance of these advantages and disadvantages plays a major role in determining which activities are carried out within families and which are performed by firms, non profit organisations, or the state. A principal defect of the transaction cost approach is its failure to provide a structure for rigorous econometric investigations. Developing such a framework requires incorporating the insights of the transaction cost approach into formal models and specifying such models in sufficient detail to permit estimation. The present essay represents a first step toward that goal. [Conclusion]

In this article Pollak discusses the theoretical advantages of the transaction cost approach compared to the new home economics. It is exclusively a verbal argumentation summing up the discussion of past 10 years in the field of family economics.

**Pollak, Robert A.** (1994): "For better or worse: The roles of power in models of distribution within marriage";

[Studies, Power, Marriage, Economic theory, Economic models]

Writers from diverse intellectual traditions inside and outside the social sciences criticise neoclassical economics for neglecting power. Their criticisms focus on economists' analyses of labour markets and of distribution within families. Marxists and feminists are among the leading critics. The classic definitions of power come from sociology and political science and resonate more for sociologists and political scientists than for economists. Economists have 3 alternative models of distribution within marriage: 1. Gary Becker's altruist model, 2. cooperative bargaining models, and 3. noncooperative bargaining models. An attempt is made to organise and order diffuse criticisms, not all of which are couched in terms of power. Criticisms that economic models of distribution between women and men neglect power fall into 3 categories - antiformal, antirhetorical, and antispecification criticisms. Emphasis is placed upon antispecification criticisms.

**Quisumbing, Agnes R and John A Maluccio** (2003): "Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa";

[Studies, Economic theory, Pareto optimum, Households, Assets, Regression analysis, Expenditures, Economic models, Allocations]

We test the unitary versus collective model of the household using specially designed data from Bangladesh, Ethiopia, Indonesia, and South Africa. Human capital and individual assets at the time of marriage are used as proxy measures for bargaining power. In all four countries, we reject the unitary model as a description of household behaviour, but fail to reject the hypothesis that households are Pareto-efficient. In Bangladesh and South Africa, women's assets increase expenditure shares on education, while in Ethiopia it is men's assets that have this effect. These increases have different implications for boys and girls across countries, however. [PUBLICATION ABSTRACT]

**Woolley, Frances R. and Judith Marshall** (1994): "*Measuring Inequality Within the Household*";

[Measurement-; Households-; Decision-making; Equality-]

The purpose of this paper is to explore a number of measures of inequality within households. We focus primarily on two types of inequality, first, inequality in money incomes, second, inequality in control over household resources. Control is measured in two ways: first, as control over the management of household finances and, second, as influence over household decision-making. We discuss arguments for and against each of the measures of inequality, and compare the measures against one another in terms of the level of inequality each measure finds. The paper does not attempt to explain inequality; instead, its aim is to discuss the question 'What is it that we wish to explain?'

**Zweimüller, Josef, et al.** (1996): "Retirement of spouses and social security reform";

[Wives, Studies, Social security, Retirement benefits, Husbands, Family income, Economic theory, Economic models, Retirement, Reforms, Marriage]

The retirement decisions of spouses may be interdependent for various reasons: similarity of tastes, joint assets, sharing rules for income and housework, or complementarity of leisure. Because of data limitations, only a few empirical studies exist on this topic. From a policy point of view, the understanding of interdependent retirement decisions should become important if legislators in different European countries are forced to synchronise minimum retirement ages for men and women that are lower now for females in a number of countries. An examination is made of the possibility of interdependent retirement using Austrian data. The findings show an asymmetry: husbands react to changes in wives' legal minimum retirement age, wives do not react vice versa. The cross-effect on men's participation rates - resulting from a rise in women's minimum retirement age - is almost half as large as the direct effect upon the women themselves.

### 3.6 Time use analysis

**Álvarez, Begoña and Daniel Miles** (2003): "Gender effect on housework allocation: Evidence from Spanish two-earner couples";

[Housework, time allocation, gender differences, bivariate negative binomial]

Abstract. In this paper we study the reasons behind the asymmetric distribution of housework within Spanish two-earner couples. Spouses' housework times are estimated jointly in a bivariate framework using data from the 1991 Work Situation and Time Use Survey. In order to understand the impact of gender-specific factors on the observed allocation of housework, we perform estimations that are in line with the Oaxaca decomposition. Our results suggest that the unequal division of domestic work between wives and husbands in our sample is mainly explained by gender-specific effects rather than by differences in their observable characteristics.

**Anxo, Dominique and Paul Carlin** (2004): "Intra-family time allocation to housework - French evidence";

[Time allocation, intra-family, time use, home production, bargaining, elasticities]

We analyse new time diary data from France to explore the relationship between economic variables and husbands' share of housework time. Consistent with both bargaining and specialisation models of the family, we find that the greater the husband's share of labour income, the lower his share of housework time; the greater the wife's market hours, the lower his housework time, but the larger his share of housework time. Treating market work as endogenous substantially lowers the size of these estimates, but they remain statistically significant. A parsimonious specification based on the specialisation model generates estimates for housework share wage elasticities. The own wage elasticity of wives' housework is -0.3 and the elasticity of husbands' housework share with respect to wives' wages is +0.25.

**Apps, Patricia and Ray Rees** (1996): "Labour supply, household production and intra-family welfare distribution";

[Labour supply; Household production; Intra-family inequality]

The model of the single utility-maximising individual, who allocates total available time between leisure consumption and market labour supply, has been the cornerstone of the theory of the household for over a century. The importance is demonstrated, in conceptual and empirical terms, of incorporating household production in models of labour supply to avoid misleading results concerning the intra-family distribution of income and behaviour responses to economic policy.

**Apps, Patricia and Ray Rees** (2001): "Household Production, Full Consumption and the Costs of Children";

[Child costs; Time allocation; Household production]

Recent work criticises both the logic and relevance of the theoretical basis of the approach to estimating the costs of raising children adopted in much of the economics literature. This tends to be restricted purely to models in which the household members consume market goods with given household income. The "costs of children" are perceived essentially as market consumption costs. This ignores the fact that an important, possibly preponderant element of child costs takes the form of parental time, which must be diverted from alternative uses such as market work, other household production activities, and leisure, to care for children. The studies also ignore the question of the differential incidence of child costs on adult members of the household. In this paper, we first of all argue that a satisfactory theoretical approach to modelling child costs must simultaneously incorporate an "individualistic" formulation of the household and a formal treatment of household production. We then provide such a model. Using data from a time use survey we estimate specialised versions of the model for families with two children and use the results to derive the intra-family distribution of resources and implied child-rearing costs.

**Aronsson, Thomas, et al.** (2001): "Estimating Intrahousehold Allocation in a Collective Model with Household Production";

[Time-use, household production, collective model]

The purpose of this paper is to estimate the intra-family distribution of income and the individual demand for leisure and household production from Swedish cross-sectional household data. As a basis for the analysis, we use a collective model where each individual is characterised by his or her own utility function and divides total time between leisure, household production and market work. For the purpose of comparison, we also estimate a version that is consistent with a more traditional model of labour supply, the unitary model.

**Beblo, Miriam** (2002): "Bargaining over Time Allocation";

[Time allocation, household bargaining, household labour supply, panel-econometric analysis]

[By P. Apps, REL, 2002] This book provides an addition to the growing literature on the intrahousehold allocation of resources. It presents modelling approaches and empirical findings from the author's dissertation thesis on the subject. The focus of the research is on the allocation of time by family members to three main activities: market labor supply, work at home and pure leisure. The study confirms the well known finding from time use survey data that women tend to work longer than men do, in terms of the total hours they allocate to market and domestic work. Women therefore have less pure leisure. The aim of the study is to shed light on the dynamic process that underlies the observed leisure differential between women and men, together with the asymmetric gender division of market and domestic work within the household.

The early chapters of the book provide a somewhat specialised survey of the literature on modelling household decision taking and the intra-household allocation of resources. Chapter 2 begins by setting out a household utility function model. Following Gronau (1977), the author differentiates between market and domestic goods. These are then assumed to be perfect substitutes that enter the utility function as a single composite consumption good, together with female and male leisures. It is important to note that this is not the standard household utility function model estimated in the microeconomic literature on family labour supply. In that literature, family utility function models are estimated on household survey data that provide information on market consumption at the level of the household and on the labour supply of each adult. Because information on time allocated to domestic work and pure leisure is missing, there can be no assigned goods in the utility function. If all family members are assumed to face the same prices, and the usual restrictions are imposed, the results yield estimates of the parameters of aggregate household demands for market consumption and the non-market times of family members. Although it is common practice to refer to the latter as "leisures," in fact they represent time allocations to domestic activity for own consumption and that of other family members.

In contrast, the leisures in the Gronau model are pure leisures. They are therefore assigned goods for which family members face different prices. Gronau was very much aware of the need for time use data for the estimation of his model and, as more recent work shows, with access to time use data the empirical specification of a family model differs from that of the standard model. Given this, the critique of the household utility function approach in the discussion of "unitary" models in chaps. 2 and 3 would seem to be misplaced. A central thesis of the book is that a dynamic bargaining framework, that allows for sequential non-cooperation between partners, offers the most empirically relevant and, from a policy perspective, the most useful approach for analysing family decision concerning labour supply, household production and leisure. Chapter 4 presents a dynamic bargaining model of time use and empirical results based on time use data from the German Socio-economic Panel (GSOEP). Chapter 5 investigates a "dominance argument" for time allocation decisions. Chapter 6 reports the results of an empirical analysis of the gender division of time within the household, again based on data from the GSOEP. The main findings from the latter are broadly consistent with the evidence on time use for other countries: women specialise strongly in domestic work and have less leisure. A fourth piece of empirical work is reported in chap. 6. This last study is based on a model in which only leisure is a private good. Market and domestic goods are treated as public goods. An important contribution of the book is to highlight the significance of time use data in empirical work on family labour supply. Without such data, we have no information on the allocation of time between domestic work and pure leisure. And if data on market consumption is available only at the household level, or if information on domestically produced substitutes for assigned market goods is missing, then empirical work will continue to be very limited. The results will not be able to tell us anything about the intrahousehold distribution of full income or



consumption, or about the preferences of family members. If future empirical work is to be policy relevant, models that fully integrate the analysis of domestic production and market labour supply, and that can also capture explicitly the intra-family effects of government policies upporting gender differences in outside opportunities, will be required. It will also be essential to specify models that can take account of the diversity in the market-domestic work choices of parents, across households with the same wage rates, non-labour incomes and demographic characteristics, so evident in the data.

**Becker, Gary S.** (1965): "A Theory of the Allocation of Time";  
[Ecnomics, Time Management]

Analyses the theory of time management spent at work and in the educational process. Importance of efficiency of non-working time in economic welfare; Determinants of the forgone earnings; Significance of foregone earnings in economics.

**Bhat, Chandra R. and Frank S. Koppelman** (1999): "A retrospective and prospective survey of time-use research";  
[Travel, Models, Research, Studies]

The central basis of the activity-based approach to travel demand modelling is that individuals' activity-travel patterns are a result of their time-use decisions within a continuous time domain. This paper reviews earlier theoretical and empirical research in the time-use area, emphasising the need to examine activities in the context or setting in which they occur. The review indicates the substantial progress made in the past five years and identifies some possible reasons for this sudden spurt and rejuvenation in the field. The paper concludes that the field of time-use and its relevance to activity-travel modelling has gone substantially past the "tip of the iceberg", though it certainly still has a good part of the "iceberg" to uncover. Important future areas of research are identified and discussed. [PUBLICATION ABSTRACT]

**Bittman, Michael ea.** (2003): "When Does Gender Trump Money? Bargaining and Time in Household Work";

[Families & family life, Gender, Family income, Households, Sex roles]

Using data from Australia and the United States, the authors explore the effect of spouses' contribution to family income on how housework is divided. Consistent with exchange-bargaining theory, women decrease their housework as their earnings increase, up to the point where both spouses contribute equally to income. In other respects, gender trumps money. The base level of housework for women is much higher. Among the small percentage of couples who are in the range where women provide 51%-100% of household income, the change in housework is opposite what exchange theory predicts: couples that deviate from the normative income standard (men make more money than women) seem to compensate with a more traditional division of household work. [PUBLICATION ABSTRACT]

**Bryant, W. Keith , et al.** (2004): "Measuring Housework in Time Use Surveys";  
[Economic theory, Studies, Housework, Polls & surveys]

A methodology is devised to decompose the error in the measurement of housework time in surveys. Using data from the Panel Study of Income Dynamics (PSID) and the Americans' Use of Time Survey, we estimate that a telephone (mail) survey rather than an interview survey leads to a mean underestimation of 60 (30) min/week for women and 18 (13) min for men. We also find that the errors created by using a narrow definition of housework leads to an underestimation of between 10 and 12 h/week for both men and women in the PSID.[PUBLICATION ABSTRACT]



**Couch, Kenneth A, et al.** (1999): "Time? Money? Both? The allocation of resources to older parents";  
[Studies, Demographics, Resource allocation, Families & family life, Models, Elder care, Older parents, Wage rates, Statistical analysis]

Estimates are provided of a reduced-form model of the allocation of household time and money resources. Four demands for these resources are considered: 1. time spent working, 2. time spent providing care for noncoresident elderly parents, 3. time spent performing housework, and 4. monetary transfers to noncoresident elderly patients. The focus is on the effects of wage rates and parental characteristics on the allocation decisions of adult children and their households concerning these four demands. It is found that households with individuals earning high wages rely relatively more on cash transfers and relatively less on time transfers than do lower-wage households. Evidence which is consistent with an unmeasured tendency of some families to provide multiple sources of support is also found.

**Gronau, Reuben** (1973): "The Intrafamily Allocation of Time: The Value of Housewives' Time";  
[Joint utility functions, time budget restriction, New Home Economics,]

Attempts a general formulation of the intrafamily allocation of time in the United States taking into consideration the value of housewives' time. Interest in the family or the household as the basic unit of consumption; Elasticity of demand for the wife's working time at home; Estimates of the value of time of housewives.

**Gronau, Reuben** (1977): "Leisure, Home Production, and Work - the Theory of the Allocation of Time Revisited";

[Joint utility functions, time budget restriction, New Home Economics,]

The paper tries to formalise the trichotomy of work in the market, work at home, and leisure. Time is used at home to produce home goods that are perfect substitutes for market goods, where home production is subject to diminishing marginal productivity. An increase in the market wage rate is expected to reduce work at home, while its effect on leisure and work in the market is indeterminate. An increase in income increases leisure, reduces work in the market, and leaves work at home unchanged. These conclusions are supported by empirical tests based on the Michigan Income Dynamics data, as well as by previous time budget studies. Further implications for labour supply, fertility, gain from marriage, demand for child care, and the measurement of home output are investigated.

This approach expands the seminal paper of G.Becker (1965) on allocation of time. While Becker does distinguish between work in the market and work at home, Gronau follows the suggestion of J.Mincer (1962) to separate leisure (or, equivalently: consumption time) from work at home analytically. The model becomes therefore more complex, but comes more to the point to investigate shifts in productive work against recreation time. The Becker model seems to be based heavily on traditional models of labour supply, while this approach goes one step further

**Gronau, Reuben R.** (2003): "Jacob Mincer and Labor Supply—Before and Aftermath";

[Labour supply, labour force participation of women]

This paper discusses the impact that Jacob Mincer's 1962 paper "Labour-Force Participation of Married Women..." had on the analysis and empirical estimation of the labour supply of married women, and the supply of labour in general. It is argued that this paper has revolutionised the analysis of labour supply. Mincer combined a theoretical model distinguishing between three uses of time (leisure, work at home, and work in the market) and Friedman's distinction between permanent and transitory earning. He showed that the wage has a positive effect on married women's labour supply, and that this supply is more affected by transitory than by permanent income changes. The new theory serves as the scaffold on which Mincer builds the empirical estimation. The interplay between theory, data, and empirical estimation, and the ingenuity of the empirical research using scant data sources, made this paper the object of emulation.

**Hallberg, Daniel and Anders Klevmarken** (2003): "Time for children: A study of parent's time allocation"; [Time-use, child care, family economics, simultaneous equation system, three-stage least squares, process benefits]

Abstract. The trade-off between parents' time with their own kids and market work, and its dependence on out-of-home day care is analysed in a simultaneous equation framework. Economic incentives primarily work through decisions about market work, while the direct effects on time with children are weak. The results suggest that a change in the mother's working hours has less influence on the parents' time with their children than a change in the father's working hours. This would imply that a policy working to increase the time with people's own children should primarily influence the father's work hours. We also find that parents prefer joint activities with their children, and that out-of-home child care is not chosen as a substitute for own time with children.

**Hamermesh, Daniel S and Gerard A Pfann** (2005): "*Time-use data in economics*";

[Time-budget data; Time spent; Labour economics; Household economics; Time allocation]

This project on time-use data in economics is one of the first in a series of new initiatives taken by the Board of Editors of the European Economic Review to publish research in newly developing areas in economics. The symposium shows the diversity of potential applications of time-budget data, a major new resource for household economics, labour economics, welfare economics, and other areas. Jacobsen and Kooreman examine how a change in shop opening-hours legislation altered consumers' time allocations. Hamermesh shows that consumers with higher full incomes enjoy more temporal variety. Klevmarken demonstrates that conventional estimates of labour-supply elasticities change substantially when time-budget data are used. Fahr shows the immensity of informal education activities and their positive correlation with formal education. [PUBLICATION ABSTRACT]

**Jacobsen, Joyce P and Peter Kooreman** (2005): "Timing constraints and the allocation of time: The effects of changing shopping hours regulations in The Netherlands";

[Time allocation; Labour supply]

A 1996 change in shopping hours regulations in The Netherlands provides an opportunity to study the effects of timing constraints on total time spent in shopping, working, and other activities as well as the timing of these activities. We develop a simple structural model to make predictions about the effects of imposition and relaxation of a timing constraint on time use patterns, and utilise time diary data from 1995, 1997, 1999, and 2000 to examine time use patterns by demographic group before and after the change. In addition to a change in the timing of shopping, we find a nonnegligible increase in the total time spent shopping. [PUBLICATION ABSTRACT]

**Kerkhofs, Marcel and Peter Kooreman** (2003): "Identification and estimation of a class of household production models";

We consider a class of household production models characterised by a dichotomy property. In these models the amount of time spent on household production does not depend on the household utility function, conditional on household members having a paid job. We analyse the (non-parametric) identifiability of the production function and the so-called jointness function (a function describing which part of household production time is counted as pure leisure). It is shown that the models are identified in the two-adult case, but not in the single-adult case. We present an empirical application to Swedish time-allocation data. The estimates satisfy regularity conditions that were violated in previous studies and pass various specification tests. For this data set we find that male and female home production time are q-substitutes.

**Kiker, B. F. and M.. Mendes de Oliveira** (1990): "Estimation and Valuation of Non-Leisure Time";

[Utility functions, Studies, Statistical analysis, Real wages, Production functions , Market equilibrium , Leisure time, Economic theory, Economic models]

The research of Gronau (1974) and Heckman (1974, 1976) on wage determination is extended by recognising that the allocation of time to market endeavors is only one choice variable within the more general problem of the allocation of time to multiple activities. Most individuals supply a large fraction of their nonleisure time to household production. A generalisation of the theory of work-leisure choice is developed that incorporates household production. An econometric model is derived that addresses simultaneously the issue of sample censoring and the joint determination of nonmarket returns and nonmarket time in a framework of optimal allocation of time. Using data from the XVI wave (1983) of the Panel Study of Income Dynamics, marginal returns to nonmarket production are found to be diminishing with hours devoted to nonmarket production. For relatively small inputs, however, allocations of time to nonmarket endeavors have an advantage over market production, thus explaining the preference for composite allocations exhibited by 2/3 of the sample.

**Kim, Jongsoog and Lydia Zepeda** (2004): "When the work is never done: Time Allocation in US Family Farm Households";

[Time allocation, household bargaining, household labour supply, child labour, farm household]

In this paper we use a Nash-cooperative bargaining framework to examine how members of US family farm households allocate their time between work and leisure. Time allocation categories for parents include farm, off-farm, and household work, as well as leisure time; for children, the categories are farm work and leisure time. The analysis includes 227 Wisconsin dairy farm households. Most notably, the results confirm that US women and children make significant labour contributions and that both women and men are decision-makers regarding their own and their children's time allocation. The results also show that intrahousehold time allocation on US farms is gender specific, and that the father's economic status has the largest impact on the time allocation of household members. The findings also confirm that children's labour makes an important economic contribution to the operation of their family farm.

**Lecocq, Sebastien** (2001): "The Allocation of Time and Goods in Household Activities: A Test of Separability";

[Conditional Demand Functions, Household Production Model, Separability Test]

In this paper, we test for the weak separability hypothesis imposed by the household production model between goods and time inputs used in the production of different commodities. Our data come from French survey which reports both expenditures and time that households devote to some activities. The results allow us to show that the weak separability assumption cannot be rejected only when households are strongly time constrained. In the opposite case, home time uses are found to be nonseparable.

**Malathy, R.** (1994): "Education and women's time allocation to nonmarket work in an urban setting in India";

[Wages & salaries, Time management, Statistical analysis, Mathematical models, Female employees, Education, Economic theory, Women, Social research, Labour force]

Consideration is made of time allocation to nonmarket work of urban women in Madras, India. The derived demand for certain disaggregated measures of household work and child-care hours is estimated. The primary goal of this exercise is to examine the responsiveness of nonmarket time allocations to economic incentives, namely, wages and income, and to understand the role of education on time allocations. Yet another objective is to examine the exogeneity assumption on children and hired help variables, which are among the other covariates included in the time allocation functions. It is demonstrated that women in Madras City spend a considerable amount of time in home production. It may be inferred that as a woman's own wage increases, she would spend less time in home production by withdrawing time spent in teaching children.

**Newman, Constance** (2002): "Gender, time use, and change: The impact of the cut flower industry in Ecuador";

[Women, Gender, Households, Statistical analysis, Labour market, Time, Employment, Economic theory, Economic models]

This article uses survey data from Ecuador to examine the effects of women's employment on the allocation of paid and unpaid labour within the household. A region with high demand for female labour is compared with a similar region in which demand for female labour is low. The comparison suggests that market labour opportunities for women have no effect on women's total time in labour but increase men's time in unpaid labour. The increase in men's time in unpaid work reflects women's increased bargaining power in the home.

**Rupert, Peter, et al.** (2000): "Homework in labor economics: Household production and intertemporal substitution";

[Intertemporal substitution; Home production]

We argue that estimates of intertemporal substitution elasticities obtained from standard life cycle models are subject to a downward bias because they neglect changes in work done at home over the life cycle. We extend the standard life cycle model to include home production and estimate it using data from three time use surveys. We find that the downward bias is large.

**Skoufias, Emmanuel** (1994): "Market wages, family composition and the time allocation of children in agricultural households";

[Wages & salaries, Time management, Families & family life, Econometrics, Children & youth, Agriculture]

The inter-relationships among adult male, female and child market wage rates, and time allocated to domestic activities, leisure and schooling by boys and girls are analysed. Results suggest that adult and child wage rates play an important role in the time allocation of both boys and girls in agricultural households in India.

**Solberg, Eric J. and David C Wong** (1992): "Family Time Use: Leisure, Home Production, Market Work, and Work Related Travel";

[Time management, Studies, Statistical analysis, Mathematical models, Effects, Dual career couples]

Data from the 1977-1978 Family Time Use Survey are used to analyse the 2-person, Gronau-type neoclassical model of the household where time use for each person is divided into 3 basic activities - market work, home production, and pure leisure - plus work-related travel time. The latter is treated as predetermined. The economics of the Gronau (1977) model are made clear, and a comparative static analysis is provided. The model is subjected to a rigorous empirical test using data that permit the division of time into its 4 primary components. The empirical results do not accord well with the model's predictions or with previous findings by Gronau. In addition, the results suggest that work-related travel has an important influence on family time use.

**Van den Brink, Henriette Maassen and Wim Groot** (1997): "A household production model of paid labour, household work and child care";

[Economic models, Economic theory, Studies, Families & family life, Child care, Domestic service, Housework, Productivity]

Data on time allocation of women is used to estimate the value of market and non market work. Four time use categories are distinguished: paid work, household work, care for children, and leisure. The estimation results show that the value of non-market production (household production and child care) is substantial and exceeds that of market production (paid work).

### 3.7 Other empirical work in the field of family economics

**Abraham, Martin** (2003): "Die Stabilisierung von Partnerschaften durch bilaterale Investitionen. Das Beispiel der Unternehmensbesitzer; Stabilising Private Relationships with Bilateral Investments. The Example of Firm Owners";

In order to explain the stability of marriages and cohabitations it is often argued that specific investments are crucial determinants of explanation. Especially within the framework of the New Home Economics it is assumed that shared investments, e.g. common children or shared property, reduce the risk of divorce. Although many empirical studies give evidence of this effect, this theory does not explain how these specific investments develop. In particular incomplete information about the partner and the need to allocate investments in an unbalanced manner will reduce one's willingness to tie oneself to a new partner. In order to explain why actors make high specific investments nevertheless, exchange theory is used to model partnerships as a dynamic process. In the beginning, the couple exchange small investments step by step. These accumulate over time to a strong commitment which enable the actors to make high unilateral investments. Within this process the actors can decide on the extent of their commitment to the partnership at any given point of time by controlling the pace of exchange in the relationship. Consequently, the higher a couple's interest in specific investments, the higher the pace of bilateral exchange is. This model is tested by comparing marriages of employed persons to those of firm owners, who are alleged to have an especially high interest in stable partnerships. Based on the data of the Mannheim Divorce Project it can be shown that firm owners and their spouses bring about crucial events in the course of a partnership, such as the first child or common real estate ownership sooner than other couples. Moreover, there is strong empirical evidence that firm owners are less likely to get divorced.

**Altonji, Joseph G , et al.** (1997): "Parental altruism and inter vivos transfers: Theory and evidence"; [Economic theory, Families & family life, Children & youth, Studies, Income distribution, Parents & parenting]

PSID data is used on the extended family to test whether inter vivos transfers from parents to children are motivated by altruism. Specifically, it is tested whether an increase by one dollar in the income of parents actively making transfers to a child coupled with a one-dollar reduction in that child's income results in the parents' increasing their transfer to the child by one dollar. The findings strongly reject the altruism hypothesis. Redistributing one dollar from a recipient child to donor parents leads to less than a 13-cent increase in the parents' transfer to the child.

**Apps, Patricia and Ray Rees** (2004): "Fertility, Taxation and Family Policy"; [Fertility; taxation; child support]

Historically, there is clear evidence of an inverse relationship between female labour supply and fertility. However, the relationship across countries is now positive. Countries like Germany and Italy, with the lowest fertility, also have the lowest female participation rates. This paper analyses the extent to which this can be explained by public policy, in particular taxation and the system of child support. The results suggest that countries which have individual rather than joint taxation, and which support families through child care facilities rather than child payments, are likely to have both higher female labour supply and higher fertility.

**Arellano, Manuel and Costas Meghir** (1992): "Female labour supply and on-the-job search: An empirical model estimated using complimentary data sets";

[Working hours, Women, Research, Polls & surveys, Job hunting]

An empirical model identified and estimated by combining data from the UK Family Expenditure Survey and the UK Labour Force Survey is discussed. The model shows that job searching has a direct negative effect on hours of work and a strong positive effect of wages on hours.

**Barmby, Tim** (1996): "Computation of Nash-bargained models of household labour supply";

[Studies, Mathematical analysis, Labour supply, Economic models, Bargaining]

A method of recovering the structural parameters of a Nash-bargaining model of household labour supply is explored. The desired hours of labour supply are computed numerically rather than analytically, thus circumventing the need for analytical tractability. This numerical procedure is then embedded in a conventional maximum-likelihood estimation to obtain estimates of the structural preference parameters. An example using Family Expenditure Survey data is reported.

**Barmby, Tim and Nina Smith** (2001): "Household labour supply in Britain and Denmark: some interpretations using a model of Pareto Optimal behaviour";

[Labour supply, Pareto optimum, Economic models, Studies, Comparative analysis]

This paper analyses the labour supply behaviour of households in Denmark and Britain. It employs models in which the preferences of individuals within the household are explicitly represented. The households are then assumed to decide on their labour supply in a Pareto Optimal fashion. Describing the structure of the household decision in this way allows preliminary results to be obtained on the internal weighting of utilities within the household.

**Belch, Michael A and Laura A Willis** (2002): "Family decision at the turn of the century: Has the changing structure of households impacted the family decision-making process?"

[Decision making, Husbands, Wives, Families & family life, Roles, Studies, Changes, Consumer behaviour, Statistical analysis]

Evaluation of husbands' and wives' influence in family decision making is heavily reliant on studies conducted in the 1970s and 1980s. Since that time, profound changes have occurred in the American family. These changes may have affected the nature of decision making in the household. To examine the degree to which earlier findings are still generalisable today, hypotheses are developed and tested with a contemporary sample of 458 men and women. Results suggest that there have been significant changes in the roles assumed in the family decision-making process, with the wife gaining more influence in all decision areas. The results indicate that marketers must reexamine their marketing strategies for some products or services. Possible theoretical explanations are suggested to explain why these changes have occurred.

**Blundell, Richard, et al.** (2001): "Collective labour supply: Heterogeneity and non-participation";

In this paper we develop the collective labour supply framework to allow for censoring and nonparticipation in employment. We derive conditions for the complete nonparametric identification of individual preferences. We extend our results to allow for unobserved heterogeneity and show identification in the log-linear labour supply framework. We derive testable implications of the collective approach. We apply our results to the estimation of a collective labour supply model for married couples without children.

**Brandon, Peter D** (2000): "An analysis of kin-provided child care in the context of intrafamily exchanges: Linking components of family support for parents raising young children";

[Economic theory, Sociology, Studies, Child care, Families & family life, Demographics]

Previous models of the choice of kin-provided child care assumed that the presence of other forms of in-kind support from relatives nearby was inconsequential to estimating effects of economic and demographic factors on the decision to use kin-provided child care. Using data from the National Longitudinal Survey of the Class of 1972, it is shown that this assumption is incorrect because use of kin-provided child care and intrafamily in-kind resource exchanges are interrelated. When the association between use of kin-provided child care and the presence of other family in-kind exchanges is ignored, it is shown that estimated effects for income, the price of child care, and maternal characteristics are underestimated. The findings provide a better understanding of why parents choose kin-provided child care by confirming that this decision is a part of a larger set of parental decisions about involvement in resource exchanges within extended families.



**Bratti, Massimiliano** (2003): "Labour force participation and marital fertility of Italian women: The role of education";

[Education, fertility, Italy, labour force participation, women]

Abstract. This paper uses data from the 1993 Survey of Household Income and Wealth conducted by the Bank of Italy in order to estimate a reduced form purist model of female marital fertility and labour force participation. It focuses in particular on the effect of formal education on both fertility and labour force participation, and accounts for the potential endogeneity of education. Our estimates show that increasing education up to the upper secondary level exerts *ceteris paribus* a positive effect on marital fertility at ages 21-39 and that highly educated women postpone fertility and have a higher labour market attachment.

**Browning, Martin and Valérie Lechene** (2003): "Children and Demand: Direct and Non-Direct Effects";

[Children, Demand, fixed effects, state dependence, intra-household effects]

This paper examines the effects of children on demands. We employ a French family expenditure survey that has a number of unusual features to explore the source of the correlation between children and demands. The first sample we use is of older households which has information on completed fertility. The second sample is of younger households for whom we have family background variables. We find that children are not exogenous for some goods. These findings cast doubt on the usual practice of identifying "direct" children effects with the coefficients on the children variables in demand equations. [PUBLICATION ABSTRACT]

**Browning, Martin and Costas Meghir** (1991): "The effects of male and female labor supply and commodity demands";

[Labour supply, demand systems, separability, conditional cost functions]

We examine the effects of male and female labour supply on household demands and present a simple and robust test for the separability of commodity demands from labour supply. Using data on individual households from six years of the UK FES we estimate a demand system for seven goods which includes hours and participation dummies as conditioning variables. Allowance is made for the possible endogeneity of these conditioning labour supply variables. We find that separability is rejected. Furthermore, we present evidence that ignoring the effects of labour supply leads to bias in the parameter estimates.

**Browning, M. ea** (1994): "Income and outcomes: A structural model of intrahousehold allocation";

[Studies, Personal income, Mathematical models, Income distribution, Economic theory]

There is evidence from several sources that one cannot treat many-person households as a single decision maker. If this is the case, then factors such as the relative incomes of the household members may affect the final allocation decisions made by the household. A method of identifying how incomes affect outcomes, given conventional family expenditure data, is developed. The basic assumption the analysis makes is that household decision processes lead to efficient outcomes. The method is applied to a sample of Canadian couples with no children. The analysis finds that the final allocations of expenditures on each partner depend significantly on their relative incomes and ages and on the level of lifetime wealth. These effects are highly significant in a statistical sense. They also suggest that the influence of differential incomes and wealth on intrahousehold allocation can be fairly substantial.

**Chiappori, Pierre-Andre, et al.** (2002): "Marriage market, divorce legislation, and household labor supply";

[Studies, Labour supply, Impact analysis, Marriage, Divorce, Legislation, Households, Economic models]

This paper provides a theoretical framework for analysing the impact of the marriage market and divorce legislation on household labour supply. In the approach, the sex ratio in the marriage market and the rules governing divorce are examples of distribution factors. These factors are defined as variables that affect the household members' bargaining position but not preferences or the joint budget set. We extend the collective labour supply model developed by Chiappori to allow for distribution factors. We show that our model imposes new restrictions on the labour supply functions and eases the identification of individual preferences and the intrahousehold decision process. The model is estimated using PSID data for the year 1988.



**Del Boca, Daniela** (2002): "The effect of child care and part time opportunities on participation and fertility decisions in Italy";

[Labour market decisions, fertility, child care]

Economic models of household behaviour typically yield the prediction that increases in schooling levels and wage rates of married women lead to increases in their labour supply and reductions in fertility. In Italy, low labour market participation rates of married women are observed together with low birth rates. Our explanation involves the Italian institutional structure, particularly as reflected in rigidities and imperfections in the labour market and characteristics of the publicly-funded child care system. These rigidities tend to simultaneously increase the costs of having children and to discourage the labour market participation of married women. We analyse a model of labour supply and fertility, using panel data. The empirical results show that the availability of child care and part time work increase both the probability of working and having a child. [Abstract]

**Del Boca, Daniela and Christopher J Flinn** (1994): "Expenditure decisions of divorced mothers and income composition";

[Mothers, Income, Divorce, Decision making, Budgeting]

The effect of the composition of a divorced mother's income on her expenditure patterns was examined through the use of simple models of the expenditure decisions made by divorced mothers on child goods. Empirical results indicate that income composition does affect the expenditure patterns of divorced mothers and that consumption externalities exist even among divorced parents.

**Del Boca, Daniela and Christopher J Flinn** (1995): "*Rationalizing child-support decisions*";

[Studies, Parents & parenting, Economic theory, Decision making, Compliance, Child welfare, Child support, Fathers, Economic models]

A framework is provided within which the child-support compliance decisions of noncustodial fathers and the child-support awards set by institutional agents can be coherently interpreted. The model of child-support transfers is able to capture qualitatively the features of the monthly payment distribution. Estimated parental-decision rules are used to infer the implicit weights given by institutional agents to the postdivorce welfare of parents and children. It is found that the weight attached to the combined welfare of the custodial mother and child is significantly less than the weight given to the father's welfare in most sample cases.

**Del Boca, Daniela and Silvia Pasqua** (2003): "Employment Patterns of Husbands and Wives and Family Income Distribution in Italy (1977-98)";

[Marriage-; Marital-Dissolution; Family-Structure; Labour-Force-and-Employment,-Size,-and-Structure-(by-industry,-occupation,-demographic-characteristics,-etc); Distribution-; Family-; Income-Distribution; Income-; Inequality-; Women-; Personal-Income-and-Wealth-Distribution]

The pattern of employment among men and women has changed remarkably over the past decades. The growth in the participation in the labour market of women with high-income husbands has heightened concerns that wives' earnings may increase income inequality among married couples, especially in countries like Italy, the U.K., and the U.S., where more noticeable growth of income inequality during the past decade has accompanied changes in employment levels. In this paper we attempt to measure the impact of the changes of women and men's employment patterns on the distribution of income among Italian households, by considering regional differences, using micro data from the Historical Archive of the Bank of Italy Survey of Household Income and Wealth (SHIW) for the period 1977-98. Our results indicate that total income distribution would have been more unequal without women's labour income.

**Duflo, Esther** (2003): "Grandmothers and Granddaughters: Old-age pensions and Intrahousehold Allocation in South Africa";

[Pensions, Public assistance programs, Studies, Gender, Allocations, Transfer of funds, Households, Developing countries, LDCs, Economic models, Economic theory]

This article evaluates the impact of a large cash transfer program in South Africa on children's nutritional status and investigates whether the gender of the recipient affects that impact. In the early 1990s the benefits and coverage of the South African social pension program were expanded for the black population. In 1993 the benefits were about twice the median per capita income in rural areas. More than a quarter of black South African children under age five live with a pension recipient. Estimates suggest that pensions received by women had a large impact on the anthropometric status (weight for height and height for age) of girls but little effect on that of boys. No similar effect is found for pensions received by men. This suggests that the efficiency of public transfer programs may depend on the gender of the recipient. [PUBLICATION ABSTRACT]

**Duncan, Alan, et al.** (2001): "Mothers' Employment and the Use of Childcare in the United Kingdom";

In this paper we consider how best to formulate economic models of employment and childcare among families with children, taking account of a range of factors which could potentially influence those decisions. Data from the UK Family Resources Survey are used to estimate jointly the choices of whether to participate in employment and whether to use formal paid childcare. The empirical results in this study suggest a strong and significant childcare price effect on the demand for childcare, and, through that, on the employment choices of mothers with children.

**Duncan, Alan, et al.** (2001): "Price and quality in the UK childcare market";

[child care, unit values, quality]

Childcare subsidies are typically advocated as a means to making paid employment profitable for mothers, but also have important ramifications for the use and quality of paid childcare. Even if one is concerned primarily with the quantity aspect, the quality dimension cannot be ignored. This paper provides an exposition of the potential biases in estimates of price elasticities with respect to quantity that do not allow for quality variation or for the possibility of non-linear pricing structures. Using an approach developed in the demand estimation literature, a price measure addressing these issues is derived and the importance of using this measure is tested using British data. Price is found to have a negative impact on the use of formal paid care, the hours purchased and the quality chosen. However, failure to control for quality effects and non-linearities in the price measure is shown to generate significant overestimates of the price elasticities.

**Engers, Maxim and Steven Stern** (2002): "Long-term care and family bargaining";

[Economic models, Families & family life, Long term health care, Economic theory, Studies, Parents & parenting, Decision making]

The structural model of how families decide who should care for elderly parents is presented. Data are used from the National Long-Term Care Survey to estimate and test the parameters of the model. Then, the parameter estimates are used to simulate the effects of the existing long-term trends in terms of the common but untested explanations for them. Finally, the effects of alternative family bargaining rules on individual utility are simulated to measure the sensitivity of the results to the family decision-making assumptions made.

**Fafchamps, Marcel and Agnes R Quisumbing** (2003): "Social roles, human capital, and the intrahousehold division of labor: Evidence from Pakistan";

[Studies, Human capital, Social life & customs, Households, Economic theory, Economic models, Gender, Families & family life]

Using detailed data from rural Pakistan, this paper investigates whether human capital, learning-by-doing, gender, and family status affect the division of labour within households. Results suggest the presence of returns to individual specialisation in all farm, non-farm, and home based activities. The intrahousehold division of labour is influenced by comparative advantage based on human capital and by long-lasting returns to learning-by-doing, but evidence is also found of a separate effect of gender and family status. Households seem to operate as hierarchies with sexually segregated spheres of activity. The head of household and his or her spouse provide most of the labour within their respective spheres of influences; other members work less. When present in the household, daughters-in-law work systematically harder than daughters of comparable age, height, and education. Other findings of interest are that there are increasing returns to scale in most household chores, that larger households work more off farm, and that better educated individuals enjoy more leisure.

**Famulari, Melissa** (1995): "A household-based, nonparametric test of demand theory";

[Studies, Statistical analysis, Economic theory, Econometrics, Consumption]

A nonparametric test of demand theory, determining the consistency of price-expenditure data with the Generalised Axiom of Revealed Preference (GARP), is applied to household microeconomic data for the first time. The fraction of consumption bundle comparisons that violate GARP is proposed as a summary statistic to indicate the consistency of a data set with revealed preference axioms. This violation rate is calculated among consumption pairs with similar expenditures to increase the power of the test. The results suggest that similar households' consumption choices and budget constraints are generally consistent with the joint hypotheses of optimising behaviour and common preferences.

**Fan, Jessie X and Joan Koonce Lewis** (1999): "Budget allocation patterns of African Americans";

[Studies, Statistical analysis, Minority & ethnic groups, Blacks, Consumer behaviour, Budgets]

The Consumer Expenditure Survey (1980-1992), Consumer Price Index (1980-1992), and ACCRA Cost of Living Index (1990) are used to construct annual household expenditure data from 1980 to 1992 to compare household budget allocation patterns of African Americans to Asian Americans, Caucasian Americans, and Hispanic Americans. Using the LA/AIDS demand system, researchers found that African American households have statistically significantly different budget allocation patterns in more than half of the 13 expenditure categories investigated in the study, after controlling for other socioeconomic and demographic characteristics.

**Findlay, Jeanette and Robert E. Wright** (1996): "Gender, poverty and the intra-household distribution of resources";

[Gender-roles; Poverty-; Wealth-distribution; Household-income; Household-budgets; Women-]

Most empirical studies of poverty assume an equal sharing of resources between all household members. There is a growing body of research indicating that this assumption is not realistic. This paper explores how the unequal sharing of resources could potentially affect the measurement of poverty. Simulations based on micro-data from two countries, Italy and the United States, are carried out under the assumption that women 'lose' and men and children 'gain' because of unequal sharing in the household. The authors' findings suggest that, if there is significant intrahousehold inequality of this type as some writers have suggested, then conventional methods of poverty measurement will likely to lead to a serious underestimate (overestimate) of the incidence and intensity of female (male) poverty.

**Flinn, Christopher J** (2000): "Modes of interaction between divorced parents";

[Economic models, Child support, Law enforcement, Divorce, Studies, Economic theory]

A model is developed in which exact compliance with child support orders is synonymous with cooperative outcomes with respect to childhood expenditures. The child support order imposed by institutional agents serves as focal point for the problem of dividing the gains from cooperation. Compliance is observed when the gains from cooperation exceed the value of noncooperation for both parents. The model is estimated using administrative data from the state of Wisconsin. The estimates imply that increasing child support enforcement activities may have weak effects on the welfare of children of divorced parents.

**Garcia, Inmaculada and Jose Alberto Molina** (1998): "*Household labour supply with rationing in Spain*";

[Studies, Economic theory, Labour supply, Males, Females, Households, Statistical analysis, Elasticity]

New empirical evidence on household labour supply with rationing is provided. To that end, the latest Spanish data is used in order to estimate three flexible functional forms, namely the NLES, the quadratic and the Hausman-Ruud forms and calculate the income and wage elasticities. It is found that the number of dependents has a negative effect on the labour supply of the female. Moreover, the North and the East Spanish regions have a clearly positive effect on the labour supply of the female, while the North has the same effect on that of the male. The elasticities of three functional forms are very similar. Male labour supply is slightly decreasing with the wage, while for the female it is increasing. Leisure is a normal good for both spouses, as expected, while the labour hours are net substitutes.

**Gronau, Reuben** (1991): "The Intrafamily Allocation of Goods--How to Separate the Adult from the Child";

[Resource allocation, Regression analysis, Propensity to consume, Family, Economic theory, Economic models, Consumption function, Children, Adults, Research, Families & family life, Economics, Economic statistics, Consumer behaviour]

The assumption of separability of parents' and children's consumption is essential for the estimation of the intrafamily allocation of resources. Although the importance of the separability assumption has been recognised before, its empirical implications have not been fully explored. Applying a variation of the Rothbarth (1943) model to the US 1972 Consumption Expenditure Survey, it is found that white married families tend to allocate 3/4 of their consumption to parents and 1/4 to children. Black families do not differ much in their distribution rule from white families; unmarried mothers spend a higher fraction of their consumption on their children. Tests for robustness, for selectivity bias, and for the separability assumption itself support the findings.

**Hersch, Joni and Leslie S Stratton** (1997): "Housework, fixed effects, and wages of married workers";

[Studies, Regression analysis, Wages & salaries, Labour market, Housework, Economic theory, Couples, Sexes, Marriage, Equality]

Although the primacy of household responsibilities in determining gender differences in labour market outcomes is universally recognised, there has been little investigation of the direct effect of housework on wages. Using data from the Panel Study of Income Dynamics, cross-sectional wage regressions reveal a substantial negative relation between wages and housework for wives, which persists in specifications controlling for individual fixed effects. The evidence for husbands is inconclusive. Married women's housework time is, on average, 3 times that of married men's. The addition of housework time to the wage equations increases the explained component of the gender wage gap from 27%-30% to 38%.

**Hersch, Joni and Leslie S Stratton** (2000): "Household specialization and the male marriage wage premium";

[Studies, Wages & salaries, Male employees, Marriage, Wage differential, Statistical analysis, Households]

Empirical research has consistently shown that married men have substantially higher wages, on average, than otherwise similar unmarried men. One commonly cited hypothesis to explain this pattern is that marriage allows one spouse to specialise in market production and the other to specialise in home production, enabling the former - usually the husband - to acquire more market-specific human capital and, ultimately, higher wages. The paper tests this hypothesis using panel data from the National Survey of Families and Households. Household specialisation, the paper concludes, does not appear to have been responsible for the marriage premium in this sample.

**Hiedemann, Bridget and Steven Stern** (1999): "Strategic play among family members when making long-term care decisions";

[Long-term care; Family bargaining; Structural estimation]

A strategic model for bargaining within a family to determine how to care for an elderly parent is described. The parameters of the model are estimated using data from the National Long-term Care Survey. It is found that the parameter estimates usually make sense and that the model is consistent with the data. The results have strong implications for using less structural empirical models for policy analysis.

**Hoddinott, John** (1992): "Rotten Kids or Manipulative Parents: Are Children Old Age Security in Western Kenya?"

[Utility functions, Studies, Older people, LDCs, Households, Economic models, Children, Behaviour, Polls & surveys, Families & Family life, Economics, Economic statistics, Developing countries]

A survey in western Kenya is used to examine the types and levels of assistance that children provide to elderly parents. Parents' influence on the level of assistance is assessed using a bargaining model of intergenerational transfers. The data are derived from interviews conducted with elderly households in Karateng sublocation, a Luo area located 375 kilometres west northwest of Nairobi. The results indicate that children serve as old age security by supplying food, money, and assistance with household tasks. Elderly households with more children are better cared for than those with fewer children. Moreover, the results provide support for models of household behaviour that incorporate bargaining among individual members. By engaging in manipulative behaviour, elderly parents can induce greater assistance with household tasks and monetary transfers.

**Kapteyn, Arie, et al.** (1990): "Quantity Rationing and Concavity in a Flexible Household Labor Supply Model";

[Wage rates, Utility functions, Studies, Statistical analysis, Shadow prices, Labour supply, Households, Economic theory, Economic models, Research, Labour force, Income, Economic statistics]

Explicit expressions are derived for the direct utility function, conditional demand equations, and concavity conditions in both price/income and quantity space for the demand system introduced by Hausman and Ruud (1984). These results are then utilised in an empirical static family labour supply model in which kinked budget constraints and unemployment benefits are taken into account for both spouses. Imposition of concavity is necessary for consistent estimation and the concavity constraint appears to be binding. Modelling household labour supply under different regimes requires the use of shadow prices if researchers wish to work with specifications that are given in dual form.

**Kapteyn, Arie, et al.** (1997): "Interdependent preferences: An econometric analysis";

[Studies, Economic theory, Econometrics, Economic models, Consumption, Households]

The theoretical model of Gaertner (1974) and Pollak (1976) for the interdependence of preferences in the Linear Expenditure System is estimated for a cross-section of households. The interdependence of consumption of different households has implications for the stochastic structure of the model and for the identifiability of its parameters. Both aspects are dealt with. The empirical results indicate a significant role played by the interdependence of preferences. One of its implications is that predictions of the effects of changes in a household's exogenous variables differ according to whether the exogenous variable only changes for this household or for all households jointly.

**Klasen, Stephan** (1998): "Marriage, bargaining, and intrahousehold resource allocation: Excess female mortality among adults during early German development, 1740-1860";

[Marriage, Mortality, Women, History, Demographics, Econometrics]

This article investigates sex-specific mortality rates in eighteenth- and nineteenth century rural Germany to determine whether there was any gender bias in the allocation of household resources. Family reconstitution data from 60 villages provide evidence of considerable excess female mortality among married adults.

**Kochar, Anjini** (1999): "Evaluating familial support for the elderly: The intrahousehold allocation of medical expenditures in rural Pakistan";

[Studies, Economic models, Health care expenditures, Elder care, Households, Rural areas, Regression analysis]

The determinants of medical expenditures on the elderly in rural Pakistani households are examined, in particular the dependence of such expenditures on the economic contribution of the elderly to household income. The results for older males are contrasted with those for younger males. It is found that medical expenditures on the elderly do reflect their individual wage rates. This result is also true for young males in households in which they are the only adult male member. The sharp decline in individual wages with age documented thus implies a corresponding reduction in medical expenditures for the elderly. Rising public concern with the status of the elderly may thus necessitate interventions in areas such as health care in order to better provide for the health needs of the elderly. This requires a reversal of the historical trends that resulted in health care systems typically oriented toward the provision of maternal care and care for children.

**Kooreman, Peter** (2000): "The labeling effect of a child benefit system";

[Consumer spending, Effects, Regression analysis, Households, Economic models, Economic theory, Welfare, Children & youth, Studies]

The effects of child benefits on expenditures are analysed by running regressions in which child benefit enters as a separate explanatory variable. The empirical analysis is based on a time series of 17 cross-section consumer expenditure surveys in the Netherlands, covering the period 1978 through 1994. Empirical evidence is presented that indicates that for some groups of households the marginal propensity to consume child clothing out of exogenous child benefits is much larger than the marginal propensity to consume child clothing out of other income sources.

**Lillard, Lee A and Robert J Willis** (1994): "*Intergenerational educational mobility*";

[Studies, Statistical analysis, Families & family life, Education, Economic theory]

An exploration is made of evidence concerning the relationship between parents' and children's education using a new body of data. The Second Malaysian Family Life Survey contains information on the education of as many as 4 generations within a given family. Such data permits the study of the spread of education in Malaysia over much of the century by examining the educational attainment of birth cohorts from 1910 to 1980. The data are used to study the effects of parental education on the progress of their children through the educational system within a sequential discrete-time hazard model that allows for correlations among unmeasured family and individual-specific components. It is found that educational attainment has increased more than 5 fold to about 10 years of education and that gender differentials have essentially disappeared by the 1988 survey.

**Lundberg, Shelly, et al.** (2003): "The retirement-consumption puzzle: a marital bargaining approach";

[Household consumption; Married couples; Retirement]

Evidence from several countries reveals a substantial drop in household consumption around the age of retirement that is difficult to explain with life-cycle models. Using food consumption data from more than 550 households from the Panel Study of Income Dynamics for the years 1979–1986 and 1989–1992, we find that married couple households decrease their expenditures on both food consumed at home and away from home by about 9% following the retirement of the male household head. No significant decrease in consumption is found for single households, either in a sample of males or a pooled sample of single males and females. These results are consistent with a model of marital bargaining in which wives prefer to save more than their husbands do to support an expected longer retirement period, and relative control over household decisions is affected by control over market income. The pattern of the consumption decline, which is increasing in the age gap between husband and wife, lends further support to this interpretation.



**Lundberg, Shelly J, et al.** (1997): "Do husbands and wives pool their resources? Evidence from the United Kingdom child benefit";

[Studies, Families & family life, Personal finance, Poolings of interest, Economic models, Clothing, Consumer spending, Consumer behaviour, Income redistribution, Sexes]

Common preference models of family behaviour imply income pooling, a restriction on family demand functions such that only the sum of husband's income and wife's income affects the allocation of goods and time. Testing the pooling hypothesis is difficult because most family income sources are not exogenous to the allocations being analysed. A study presents an alternative test based on a natural experiment - a policy change in the UK that transferred a substantial child allowance to wives in the late 1970s. Using Family Expenditure Survey data, the study finds strong evidence that a shift toward greater expenditures on women's clothing and children's clothing relative to men's clothing coincided with this income redistribution.

**Maitra, Pushkar and Ranjan Ray** (2003): "The effect of transfers on household expenditure patterns and poverty in South Africa";

[Studies, Poverty, Property transfers, Family income]

This paper uses household level unit record data from South Africa to examine the behavioural and welfare impacts of private and public transfers. It allows for joint endogeneity of resource variables and the expenditure shares. Results show that crowding out of private transfers as a result of the introduction of public pensions holds only for poor households and not for the non-poor. Both private transfers and public pensions significantly reduce poverty but private transfers have a larger impact on expenditure patterns. The results also reject the hypothesis of income pooling underlying the conventional unitary model by finding that the marginal impact on expenditures are different for public pension received, private transfer received and other resources flowing into the household. The principal conclusions are robust to changes in specification.

**Nicol, Christopher J and Alice Nakamura** (1994): "Labor supply and child status effects on household demands";

[Women, Studies, Labour supply, Families & family life, Economic models, Demand analysis]

A study draws attention to empirical evidence for the UK and Canada rejecting the separability of household commodity demands from labour supply. As might be anticipated on the basis of these rejections, using Canadian data, clear patterns are found in the average expenditure shares for husband-wife families classified by whether both spouses, only the man, only the woman, or neither worked. The patterns remain even when the families are further categorised by child-status and by family income. A number of implications of these findings are considered, including those for welfare analysis, taxation and consumer marketing.

**Parish, William L and Robert J Willis** (1993): "Daughters, education, and family budgets: Taiwan experiences";

[Statistical analysis, Family income, Education, Economic theory, Economic models]

Growth in the education of the labour force is one of the most important determinants of economic growth, and the distribution by sex is a key determination of gender inequality. How parents choose to invest in sons' education versus daughters' education and the consequences of these choices for women's life chances are investigated using retrospective data on the life cycle and family behaviour of Taiwanese individuals who came of age from the 1940s onward. Broadly, the findings support economic models of the family in which attempts by altruistic parents to finance optimal investments in their children's human capital are frustrated by credit constraints. In poor families and in older cohorts, older sisters help increase the education of younger siblings of both sexes. In more recent periods and among more affluent families, there is less need for one child to sacrifice for another and the effects of family size and gender composition are markedly weaker.



**Phipps, Shelley A and Peter S Burton** (1998): "What's mine is yours? The influence of male and female incomes on patterns of household expenditure";

[Personal income, Men, Women, Households, Wage differential, Statistical analysis, Studies]

Microdata from the 1992 Statistics Canada Family Expenditure Survey is used to provide evidence that male and female incomes do not always exert identical influences on household expenditures. It is demonstrated that while incomes may be pooled for some categories of consumption, the income pooling hypothesis must be rejected for others. An effort is made to go beyond simply rejecting the pooling hypothesis to ask how male versus female income is used. The results stress the on-going importance of traditional gender roles. For example, it is found that expenditures on child care increase only with women's incomes - higher male income is not associated with higher expenditure on child care even when both spouses are full-time, full-year paid workers.

**Plug, Erik J S and Bernard M S. Van Praag** (1998): "Similarity in response behavior between household members: An application to income evaluation";

[Individual welfare function; Household welfare function; Minimum income question; Household response behaviour]

In many household survey questions are posed to one of the members of the household, assuming that he or she represents the household. For observed behaviour this is mostly permissible; however, for attitudes and opinions, the representativeness is dubious. The finding that for subjective questions of the Leyden-type both adult partners appear to answer almost identically.

**Pradhan, Menno and Arthur van Soest** (1997): "Household labor supply in urban areas of Bolivia";

[Labour supply, Urban areas, LDCs, Economic models, Households, Wage differential, Elasticity, Studies, Developing countries, Employment, Families & family life, Economics]

Labour supply behaviour and the choice between formal and informal sector work of the two spouses in families in urban areas of a developing country are analysed using cross-section data from Bolivia drawn in 1989. The model generalises the neoclassical family labour supply model. Nonmonetary returns of formal sector employment capture the fact that the choice between sectors is not exclusively based on wage differentials. Wage equations, nonmonetary returns equations, and labour supply equations are estimated jointly by smooth simulated maximum likelihood. Substantial cross-wage elasticities are found of working hours of both partners and large substitution elasticities between the two sectors.

**Ressler, Rand W and Melissa S Waters** (1995): "*The economics of cohabitation*";

[Economic theory, Economic models, Consumer behaviour, Cohabitation]

Ressler and Waters present an economic model of cohabitational demand based on the standard theory of consumer choice. Regression analysis of US data aggregated at the state level supports this model.

**Ressler, Rand W and Melissa S Waters** (2000): "Female earnings and the divorce rate: A simultaneous equations model";

[Studies, Females, Earnings, Divorce, Economic models, Human capital]

Economists have contributed a great deal of research, both theoretical and empirical, to the study of marital formation and dissolution. Many empirical examinations of marriage and divorce rates exist based on Becker's seminal contributions to the literature. All of these divorce studies are single equation models, with female earnings assumed exogenous. As discussed by Becker (1981), however, causality may run in the opposite direction as well: the divorce rate may influence female earnings. This paper estimates a simultaneous equations model in which divorce rates and female earnings are the jointly endogenous variables. Data are by state, for 1960, 1970, 1980 and 1990. The state-wide divorce rate equation is an extension of Waters and Ressler (1999), and the specification of a state-wide earnings equation follows standard human capital theory. The specification of joint endogeneity between female earnings and the divorce rate allows valid inferences to be made regarding the effect of female earnings on divorce for the first time. Most previous single equation studies of divorce have found that increases in female earnings significantly increase divorce rates. A simultaneous equations model will allow inferences to be made regarding the possibility of joint determination, which may cause a reevaluation of previous results.

**Seaton, Jonathan S** (2001): "Bargaining versus Non-cooperation; Transaction Costs within Marriage"; [Marriage-; Marital-Dissolution; Family-Structure; Time-Allocation-and-Labour-Supply-(hours-of-work,-part-time-employment,-work-sharing,-absenteeism);Consumer-Economics-Empirical-Analysis; Expenditure-; Family-; Households-; Labour-Supply; Marriage-; Preference-; Household-Production]

Household labour supply models, which assume separate utility functions for the two principle household members, can be categorised as either non-cooperative or Pareto efficient bargaining games. In this paper a revealed preference non-parametric test is applied to UK family expenditure data to determine why some data observations are consistent with a Pareto efficient outcome. The empirical findings support the view that there are costs of bargaining within marriage and that they are typically related to the cost of female time. The implication being that as the cost of female time increases so do the transaction costs associated with a bargaining outcome.

**Simister, John and Jenifer Piesse** (2003): "Bargaining and Household Dynamics: The Impact of Education and Financial Control on Nutrition Outcomes in South Africa"; [Economic-Development-Human-Resources; Income-Distribution;]

Data from two thousand urban households in South Africa are used to investigate the impact of financial control and expenditure patterns, to assess the effect of household dynamics on levels of nutrition. Previous studies have noted the importance of female participation in the labour market, but this study finds that differential education levels and the control of financial resources have most impact on how household expenditure decisions are made. Thus, increased education levels for women have valuable spillover effects for families and can complement efforts to improve nutrition in poor communities.

**Snyder, Susan K** (2000): "Nonparametric testable restrictions of household behavior"; [Households, Consumer behaviour, Economic theory, Economic models, Restrictions, Utility functions, Studies]

This paper uses semialgebraic theory to derive nonparametric testable restrictions of Pareto-efficient bargaining behaviour within a household. These tests are analogous in form to the Samuelson's Weak Axiom of Revealed Preference and are defined over data on household-level consumption and individual labour supplies. Thus, without observing intra-household division of consumption, it can be nonparametrically tested whether there exist nonsatiated utility functions such that household behaviour is Pareto efficient. These tests are applied to data from the National Longitudinal Surveys on U.S. households, and it is found that preferences exist that are consistent with Pareto efficiency for each household in the data set.

**van der Klaauw, Wilbert** (1996): "Female labour supply and marital status decisions: A life-cycle model"; [Women, Marital status, Labour force, Economic models]

A study examined the interdependence between the determinants of life-cycle marital status and labour force participation decisions of women. A dynamic utility maximisation model is presented.

**van der Lippe, Tanja and Jacques J Siegers** (1994): "Division of household and paid labour between partners: Effects of relative wage rates and social norms"; [Wages & salaries, Sexes, Labour force, Economic theory, Economic models]

In a study of the division of household and paid labour between Dutch couples, it was found that the wife's share in both types of labour is affected by her partner's relative wage rates as well as by the norms of the household.

**van Soest, Arthur** (1995): "Structural models of family labor supply: A discrete choice"; [Studies, Statistical analysis, Leisure, Labour supply, Family income, Economic models]

A static neoclassical structural model that explains labour supply of both spouses in 2 adults households is presented. Family preferences are described with a direct translog utility function, with the husband's leisure, the wife's leisure, and family income as its arguments. It is assumed that the choice set of each family is finite. Account is taken of the Dutch tax benefits and system. The study also allows for hours restrictions and random preferences and accounts for unobserved wages of nonworkers. The models are estimated using smooth simulated maximum likelihood. Results based upon Dutch cross-section data from 1987 are illustrated by confidence intervals for elasticities and by several policy simulations.

**Woittiez, Isolde and Arie Kapteyn** (1998): "Social interactions and habit formation in a model of female labor supply";

[Household labour supply; Wages; Habit formation; Interdependent preferences; Latent variables; Factor analysis]

The influence of habit formation and preference interdependence on labour supply behaviour of married females is investigated. Direct survey information on reference groups of individuals in a neoclassical labour supply model is incorporated. For that purpose, a latent variables model relating the direct information to the "true" but unobserved reference groups is first estimated. One of the most interesting features of the model is that the presence of young children becomes an insignificant factor in the hours equation while it remains a significant factor in the participation decision. In addition, the labour supply curve is much flatter in a model with habit formation and preference interdependence than in a model without it. Both habit formation and preference interdependence contribute significantly to the explanation of the female labour supply.

**Zhang, Junsen and William Chan** (1999): "Dowry and wife's welfare: A theoretical and empirical analysis"; [Economic theory, Prenuptial agreements, Wives, Social life & customs, Economic models, Studies]

Becker attributes the existence of marital transfers to inflexibility in the division of joint product within the marriage. If that were the only reason, we would not have observed the coexistence of dowries and bride-prices. This paper offers an alternative analysis. While Becker's interpretation is retained for bride-prices, a dowry is now represented as a premortem bequest by altruistic parents for a daughter. It not only increases the wealth of the new conjugal household but also enhances the bargaining power of the bride in the allocation of output within that household, thereby safeguarding her welfare. Using micro data from Taiwan, we found that a dowry improves the bride's welfare whereas a bride-price has no effect. These empirical results support the theoretical predictions of the model.

### 3.8 General Equilibrium approaches

**Apps, Patricia and Ray Rees (1999):** "On the taxation of trade within and between households";

[Tax reform, Households, Production functions, Economic models, Studies, Industrialised nations, International]

Tax reform proposals affect individual welfares in ways which strongly depend on the nature of specialisation in household production and the pattern of trade within households. Variation in the degree of specialisation in domestic production across households strongly influences the impacts on individual tax burdens of a given tax reform. The standard models of the economics literature cannot be used to analyse these issues because they ignore the two-person nature of households and the existence of household production and trade. A simple and tractable model is proposed to remedy this and is used to analyse the impacts of the types of tax reform that have been the subject of recent policy debate.

**Apps, Patricia and Ray Rees (1999):** "Individual versus joint taxation in models with household production";

[Utility functions, Economic models, Pareto optimum, Taxation economics, Equilibrium, Welfare economics, Studies, Equilibrium]

In a recent paper, Piggott and Whalley (1996) challenge the conventional wisdom that says that the individual rather than the household should be the unit of taxation and argue instead for joint taxation. The weakness in the Piggott-Whalley reasoning lies in its failure to take account of the main conclusion of the theory of the second-best. The Piggott-Whalley calculations show that a move from an existing tax structure with unequal marginal tax rates for primary and secondary workers, to joint taxation, which equalises these tax rates, can increase welfare. It must then be possible to achieve a further welfare improvement by departing in some direction from the joint taxation structure reached, as long as it is not a second-best optimum. A formal analysis of these points is provided.

**Apps, Patricia and Ray Rees (2001):** "Fertility, Female Labor Supply and Public Policy";

[Fertilität, Frauenerwerbstätigkeit, Steuersystem, Kinderbetreuung]

Historically, in virtually all developed economies there seems to be clear evidence of an inverse relationship between female labour supply and fertility. However, particularly in the last decade or so, the relationship across countries has been positive: for example countries like Germany, Italy and Spain with the lowest fertility rates also have the lowest female participation rates. We accept the hypothesis that the reason for this lies in the combined effects of a country's tax system and system of child support, and we have sought to clarify this theoretically, using an extended version of the Galor-Weil model. The results suggest that countries with individual rather than joint taxation, and which support families through improved availability of alternatives to domestic child care, rather than through direct child payments, are likely to have both higher female labour supply and higher fertility. These results are strengthened when we take account of the heterogeneity among households that undoubtedly exists. [Abstract]

**Apps, Patricia and Ray Rees (2004):** "Fertility, Taxation and Family Policy";

[Fertility; taxation; child support]

Historically, there is clear evidence of an inverse relationship between female labour supply and fertility. However, the relationship across countries is now positive. Countries like Germany and Italy, with the lowest fertility, also have the lowest female participation rates. This paper analyses the extent to which this can be explained by public policy, in particular taxation and the system of child support. The results suggest that countries which have individual rather than joint taxation, and which support families through child care facilities rather than child payments, are likely to have both higher female labour supply and higher fertility.

**Del Boca, Daniela and Christopher J Flinn** (1995): "*Rationalizing child-support decisions*";

[Studies, Parents & parenting, Economic theory, Decision making, Compliance, Child welfare, Child support, Fathers, Economic models]

A framework is provided within which the child-support compliance decisions of noncustodial fathers and the child-support awards set by institutional agents can be coherently interpreted. The model of child-support transfers is able to capture qualitatively the features of the monthly payment distribution. Estimated parental-decision rules are used to infer the implicit weights given by institutional agents to the postdivorce welfare of parents and children. It is found that the weight attached to the combined welfare of the custodial mother and child is significantly less than the weight given to the father's welfare in most sample cases.

**Piggott, John and John Whalley** (1999): "Reply to Apps/Rees and Gottfried/Richter";

[Taxation economics, Economic models, Equilibrium, Equilibrium]

The comments by Apps and Rees (1999) and Gottfried and Richter (1999) each analyse optimal rate structures for two-member households in a variant of the model used in Piggott and Whalley (1996). Neither disputes the essential logic offered of an added distortion that comes into play only under individual taxation and, hence, biases policy choices toward household-based taxes. Both challenge the conclusion that in models with household production it is more likely that a pairwise comparison between household and individual taxation will favour household taxation.

### 3.9 Handbooks, readers, surveys, collected editions

Ashenfelter, Orley and Richard Layard (ed.) (1986): *"Handbook of Labor Economics"*; Vol 1-2  
Ashenfelter, Orley and David Card (ed.) (1999): *"Handbook of Labor Economics"*; Vol 3a-3c

The Handbook brings together a systematic review of the research topics, empirical findings, and methods that comprise modern labour economics. It serves as an introduction to what has been done in this field, while at the same time indicating possible future trends which will be important in both spheres of public and private decision-making.

Part I is concerned with the classic topics of labour supply and demand, the size and nature of the elasticities between the two, and their impact on the wage structure. This analysis touches on two fundamental questions: what are the sources of income inequality, and what are the disincentive effects of attempts to produce a more equal income distribution?

The papers in Part II proceed from the common observation that the dissimilarity in worker skills and employer demands often tempers the outcomes that would be expected in frictionless labour markets. And the last section of the Handbook deals explicitly with the role of institutional structures (e.g. trade unions) that now form an important part of modern labour economics.

Cigno, Alessandro (1991): *"Economics of the Family"*

Cigno develops a comprehensive model of partner matching, family formation, family persistence, resource allocation, fertility decisions and divorce. It has become a standard reference of the 90ies.

Kooreman, Peter and Sophia Wunderink (1997): *"Economics of Household Behaviour"*

This new text focuses upon the growing interest in the economic behaviour of households and families and examines the microeconomic behaviour of household units and their place in the macroeconomic environment. By combining a number of aspects of household behaviour the authors have produced a stimulating and innovative international text in this topical area.

Rosenzweig, Mark R. and Oded Stark (1997): *"Handbook of Population and Family Economics"*

The collection of chapters in the Handbook of Population and Family Economics and their organisation reflect the most recent developments in economics pertaining to population issues and the family. The rationale, contents, and organisation of the Handbook evolve from three premises. First, the family is the main arena in which population outcomes are forged. Second, there are important interactions and significant causal links across all demographic phenomena. Third, the study of the size, composition, and growth of a population can benefit from the application of economic methodology and tools. The diversity and depth of the work reviewed and presented in the Handbook conveys both the progress that has been made by economists in understanding the forces shaping population processes, including the behaviour of families, and the many questions, empirical and theoretical, that still remain.

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